



Service Manual **Sky Air R-407C**

B-series



Service Manual **Sky Air R-407C**

B-series

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2 Disassembly and Maintenance: Indoor Units

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1 Introduction

1.1 About This Manual

Target group This service manual is intended for and should only be used by qualified engineers.

Purpose of this manual This service manual contains all the information you need to do the necessary repair and maintenance tasks for the Sky Air B-series room air conditioners.

Five parts This service manual consists of an introduction, five parts and an index:

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1.2 Combination Overview: Outdoor Units other than the Sky Air B-Series

Introduction

In the table in this section:

- The units in grey boxes are described in ESIE99-01.
- “(o.m.)” stands for old model. These are not described in this manual.
- “M” stands for multi combination.
- “P” stands for pair combination.
- “T” stands for twin, triple or double twin combination.

Combination table

The table below contains the possible combinations between Sky Air B-series indoor units and outdoor units other than the Sky Air B-series.

| Indoor unit Outdoor unit | | | FHC35BZV1 | FHC45BZV1 | FHC60BZV1 | FHYC35BZV1 | FHYC45BZV1 | FHYC71BZV1 | FHYC100BZV1 | FHYC125BZV1 | FH35BZV1 | FH45BZV1 | FH60BZV1 | FHK35BZV1 | FHK45BZV1 | FHK60BZV1 |
|-----------------------------|--------------|---|-----------|-----------|-----------|------------|------------|------------|-------------|-------------|----------|----------|----------|-----------|-----------|-----------|
| Split | Small c/o | R35E(A)Z7V11(o.m.) R35GZ7V11 | P | — | — | — | — | — | — | — | P | — | — | P | — | — |
| | | R45E(A)Z7V11/W11(o.m.) R45GZ7V11/W11 | — | P | — | — | — | — | — | — | — | P | — | — | P | — |
| | | R60GZ7W1 | — | — | P | — | — | — | — | — | — | — | P | — | — | P |
| | | MA56GZ7W11 | M | M | — | — | — | — | — | — | M | M | — | M | M | — |
| | | MA90GZ7W11 | M | M | M | — | — | — | — | — | M | M | M | M | M | M |
| | Small h/p | RY35E(A)Z7V1 | — | — | — | P | — | — | — | — | — | — | — | — | — | — |
| | | RY45E(A)Z7V1 | — | — | — | — | P | — | — | — | — | — | — | — | — | — |
| Sky Air G-series | Large c/o | R71GZV1/W1/T1 | — | — | — | T | — | P | — | — | — | — | — | — | — | — |
| | | R100GZ7V1/W1/T1 | — | — | — | T | T | T | P | — | — | — | — | — | — | — |
| | | R125GZ7W1/T1 | — | — | — | T | T | T | — | P | — | — | — | — | — | — |
| | Large h/p | RY71GZ7V1/W1 | — | — | — | T | — | — | — | — | — | — | — | — | — | — |
| | | RY100GZ7V1/W1 | — | — | — | T | T | — | — | — | — | — | — | — | — | — |
| | | RY125GZ7W1 | — | — | — | T | T | — | — | — | — | — | — | — | — | — |

1.3 Combination Overview: Outdoor Units of the Sky Air B-Series

Introduction

In the tables in this section:

- “P” stands for pair combination.
- “T” stands for twin, triple or double twin combination.

FHYBP, FHYP and FDYP

The table below contains the possible combinations between indoor units (FHYBP, FHYP and FDYP) and outdoor units of the Sky Air B-series.

| Indoor unit Outdoor unit | | FHYBP35B7V1 | FHYBP45B7V1 | FHYBP60B7V1 | FHYBP71B7V1 | FHYBP100B7V1 | FHYBP125B7V1 | FHYP35BV1 | FHYP45BV1 | FHYP60BV1 | FHYP71BV1 | FHYP100BV1 | FHYP125BV1 | FDYP125B7V1 | FDYP200B7V1 | FDYP250B7V1 |
|-----------------------------|-----------------|-------------|-------------|-------------|-------------|--------------|--------------|-----------|-----------|-----------|-----------|------------|------------|-------------|-------------|-------------|
| Large c/o | RP71B7V1/W1/T1 | T | — | — | P | — | — | T | — | — | P | — | — | — | — | — |
| | RP100B7V1/W1/T1 | T | T | T | T | P | — | T | T | T | T | P | — | — | — | — |
| | RP125B7W1/T1 | T | T | T | T | — | P | T | T | T | T | — | P | P | — | — |
| | RP200B7W1 | T | T | T | T | T | T | T | T | T | T | T | T | T | P | — |
| | RP250B7W1 | — | T | T | T | T | T | — | T | T | T | T | T | T | — | P |
| Large h/p | RYP71B7V1/W1 | T | — | — | P | — | — | T | — | — | P | — | — | — | — | — |
| | RYP100B7V1/W1 | T | T | T | T | P | — | T | T | T | T | P | — | — | — | — |
| | RYP125B7W1 | T | T | T | T | T | P | T | T | T | T | T | P | P | — | — |
| | RYP200B7W1 | T | T | T | T | T | T | T | T | T | T | T | T | T | P | — |
| | RYP250B7W1 | — | T | T | T | T | T | — | T | T | T | T | T | T | — | P |

FHYCP, FUYP, FAYP and FHYKP

The table below contains the possible combinations between indoor units (FHYCP, FUYP, FAYP and FHYKP) and outdoor units of the Sky Air B-series.

| Indoor unit Outdoor unit | | FHYCP35B7V1 | FHYCP45B7V1 | FHYCP60B7V1 | FHYCP71B7V1 | FHYCP100B7V1 | FHYCP125B7V1 | FUYP71BV17 | FUYP100BV17 | FUYP125BV17 | FAYP71BV1 | FAYP100BV1 | FHYKP35BV1 | FHYKP45BV1 | FHYKP60BV1 | FHYKP71BV1 |
|-----------------------------|-----------------|-------------|-------------|-------------|-------------|--------------|--------------|------------|-------------|-------------|-----------|------------|------------|------------|------------|------------|
| Large c/o | RP71B7V1/W1/T1 | T | — | — | P | — | — | P | — | — | P | — | T | — | — | P |
| | RP100B7V1/W1/T1 | T | T | T | T | P | — | T | P | — | T | P | T | T | T | T |
| | RP125B7W1/T1 | T | T | T | T | — | P | T | — | P | T | — | T | T | T | T |
| | RP200B7W1 | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| | RP250B7W1 | — | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| Large h/p | RYP71B7V1/W1 | T | — | — | P | — | — | P | — | — | P | — | T | — | — | P |
| | RYP100B7V1/W1 | T | T | T | T | P | — | T | P | — | T | P | T | T | T | T |
| | RYP125B7W1 | T | T | T | T | T | P | T | T | P | T | T | T | T | T | T |
| | RYP200B7W1 | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T |
| | RYP250B7W1 | — | T | T | T | T | T | T | T | T | T | T | — | T | T | T |

Part 1

System Outline

What is in this part? This part contains the following chapters:

| Chapter | See page |
|----------------------------------|----------|
| 1-General Outline: Outdoor Units | 1-3 |
| 2-General Outline: Indoor Units | 1-27 |
| 3-Specifications | 1-57 |
| 4-Functional Diagrams | 1-71 |
| 5-Switch Box Layout | 1-95 |
| 6-Wiring Diagrams: Outdoor Units | 1-115 |
| 7-Wiring Diagrams: Indoor Units | 1-135 |
| 8-PCB Layout | 1-145 |

1

1 General Outline: Outdoor Units

1.1 What Is in This Chapter?

Introduction

This chapter contains the following information on the outdoor units:

- Outlook and dimensions
- Installation and service space
- Components.

General outline

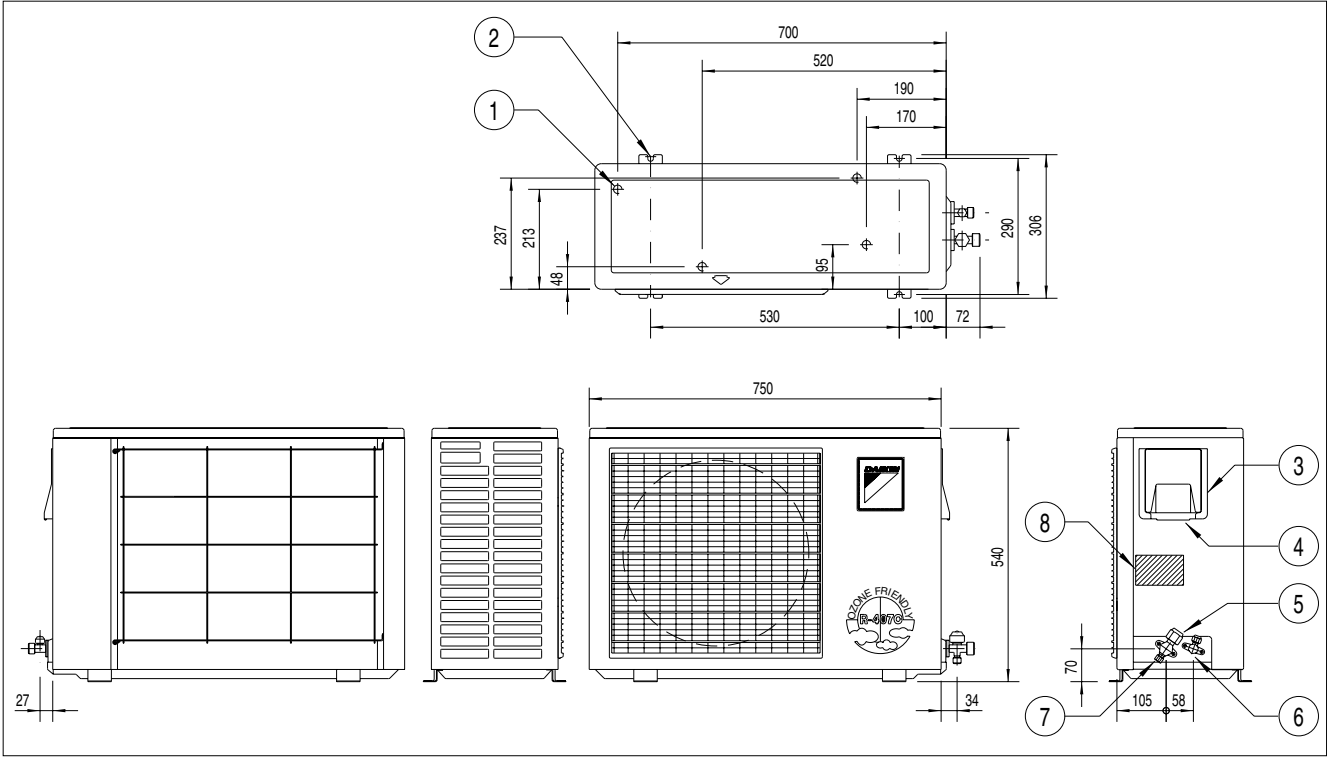
This chapter contains the following general outlines:

| General outline | See page |
|---|----------|
| 1.2–R35GZ7V11, R45GZ7V11 and R45GZ7W11 | 1–4 |
| 1.3–RY35EAZ7V1 and RY45EAZ7V1 | 1–6 |
| 1.4–R60GZ7W1 | 1–8 |
| 1.5–MA56GZ7W11 | 1–10 |
| 1.6–MA90GZ7W11 | 1–12 |
| 1.7–RP71B7V1, RP71B7W1, RP71B7T1, RYP71B7V1 and RYP71B7W1 | 1–14 |
| 1.8–RP100B7V1, RP100B7W1, RP100B7T1, RP125B7W1, RP125B7T1, RYP100B7V1, RYP100B7W1 and RYP125B7W1 | 1–16 |
| 1.9–RP200B7W1 and RYP200B7W1 | 1–18 |
| 1.10–RP250B7W1 and RYP250B7W1 | 1–20 |
| 1.11–RP71B7V1, RP71B7W1, RP71B7T1, RYP71B7V1, RYP71B7W1, RP100B7V1, RP100B7W1, RP100B7T1, RP125B7W1, RP125B7T1, RYP100B7V1, RYP100B7W1 and RYP125B7W1: Installation and Service Space | 1–22 |
| 1.12–RP200B7W1, RP250B7W1, RYP200B7W1 and RYP250B7W1: Installation and Service Space | 1–24 |

1.2 R35GZ7V11, R45GZ7V11 and R45GZ7W11

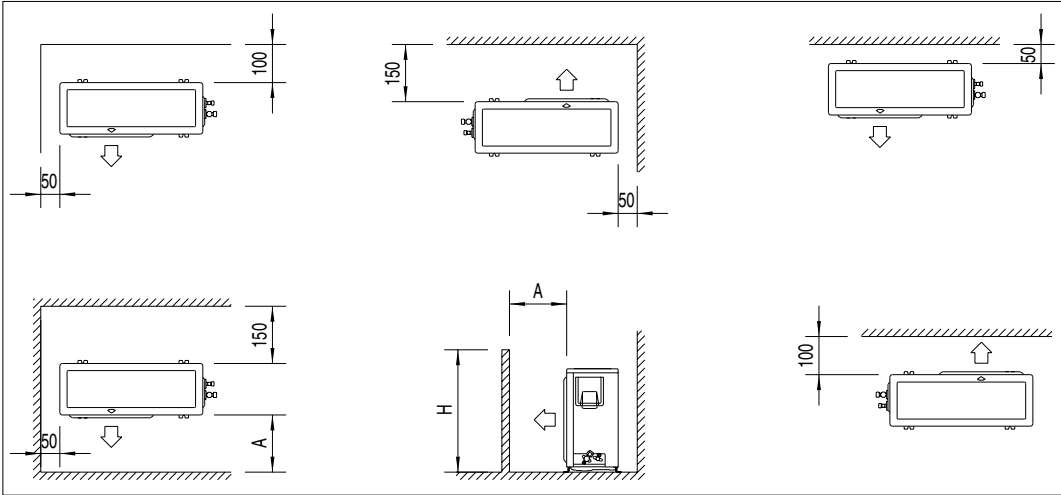
Outlook and dimensions

The illustration below shows the outlook and the dimensions of the unit (mm).



Installation and service space

The illustration below shows the required installation and service space (mm).



| H | A |
|--------|-------|
| ≤ 1000 | ≥ 250 |
| > 1000 | ≥ 500 |

Components

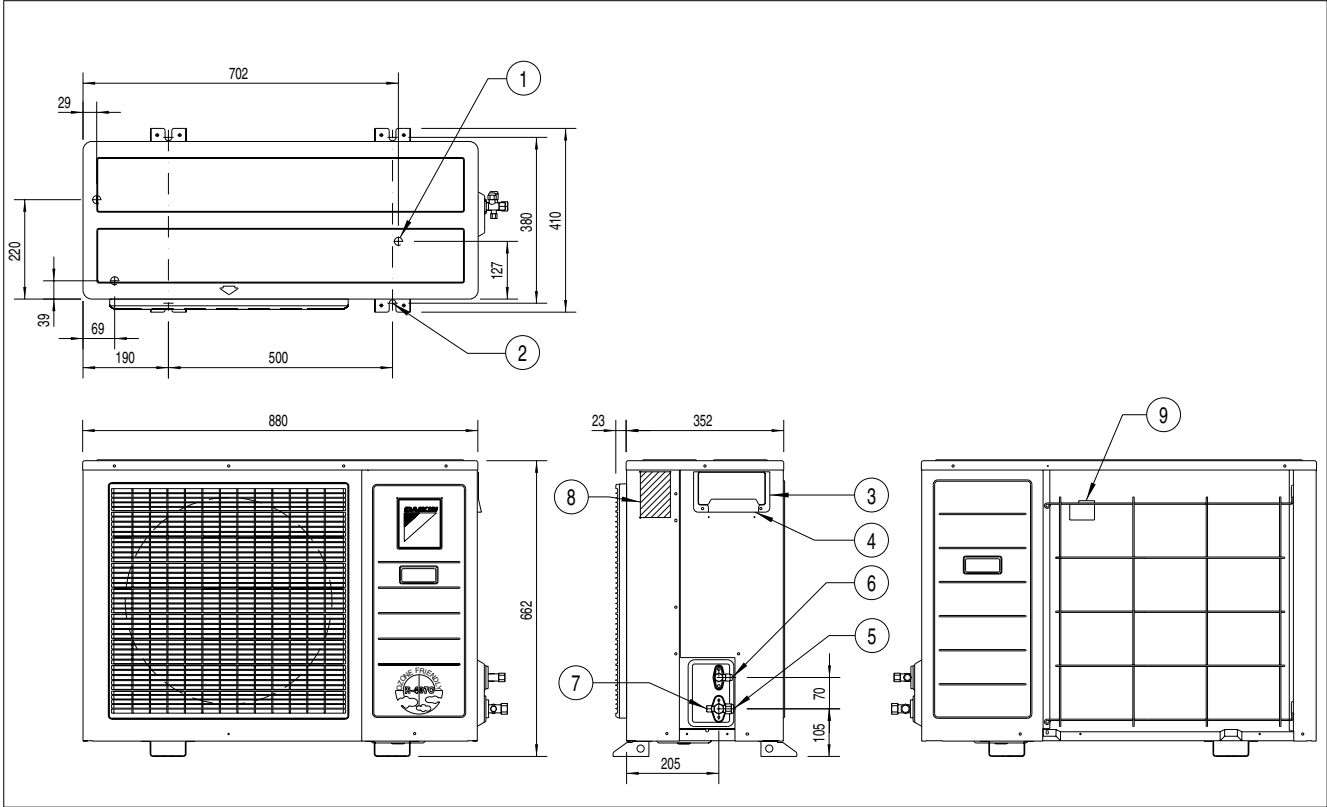
The table below contains the different components of the unit.

| No. | Component |
|-----|--------------------------------------|
| 1 | 4 x drain outlet |
| 2 | 4 x hole for anchor bolt (M8 or M10) |
| 3 | Service cover + wiring diagram |
| 4 | Power intake |
| 5 | Gas stop valve |
| 6 | Liquid stop valve |
| 7 | Service port |
| 8 | Name plate |

1.3 RY35EAZ7V1 and RY45EAZ7V1

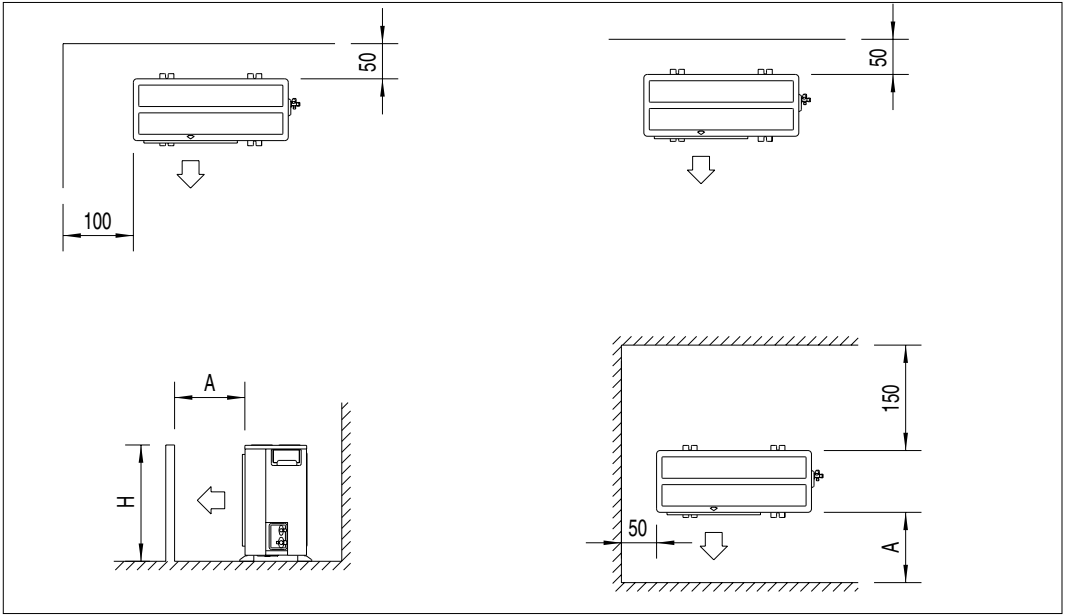
Outlook and dimensions

The illustration below shows the outlook and the dimensions of the unit (mm).



Installation and service space

The illustration below shows the required installation and service space (mm).



| H | A |
|--------|-----|
| ≤ 1000 | 300 |
| > 1000 | 600 |

Components

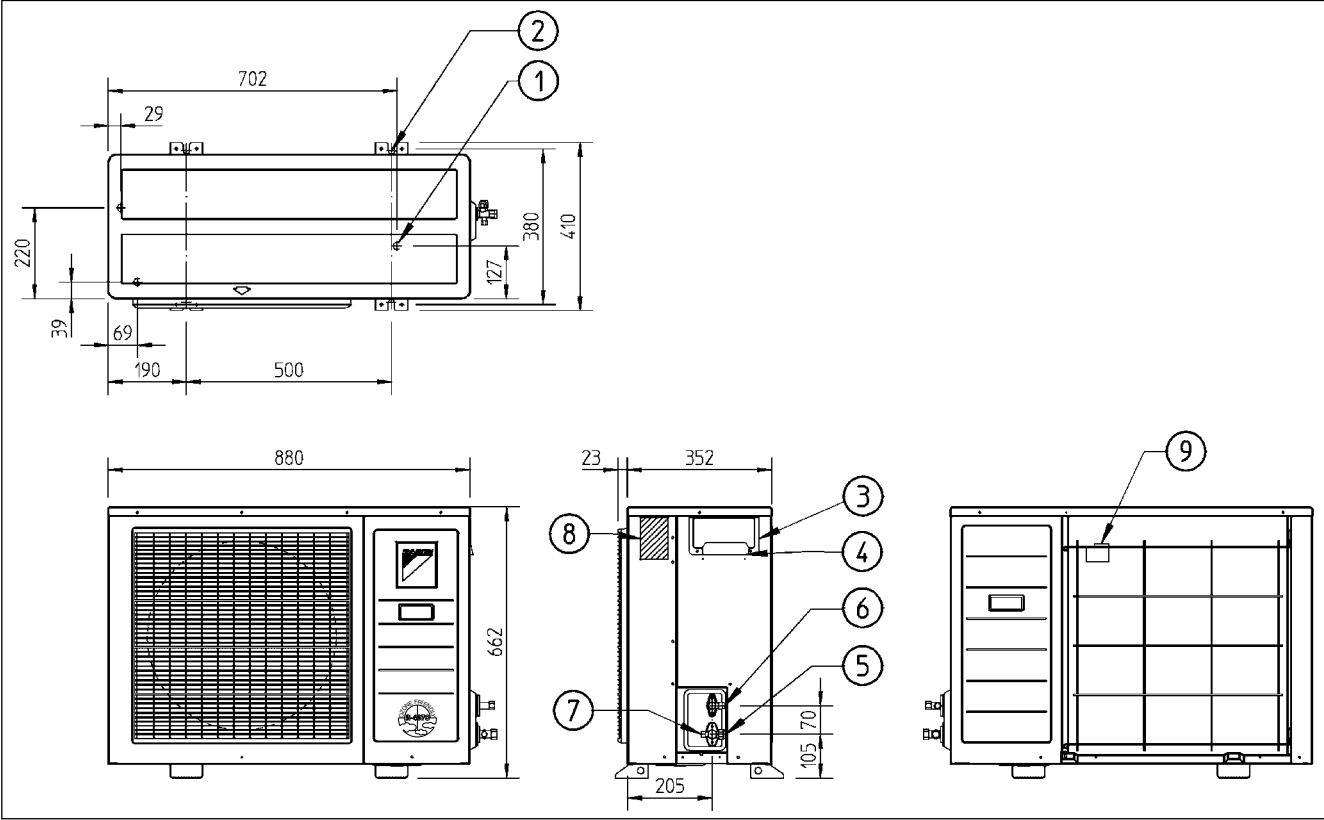
The table below contains the different components of the unit.

| No. | Component |
|-----|--------------------------------|
| 1 | 3 x drain outlet |
| 2 | 4 x hole for anchor bolt (M10) |
| 3 | Service cover |
| 4 | Power supply intake |
| 5 | Gas stop valve |
| 6 | Liquid stop valve |
| 7 | Service port |
| 8 | Name plate |
| 9 | Outdoor air thermostat |

1.4 R60GZ7W1

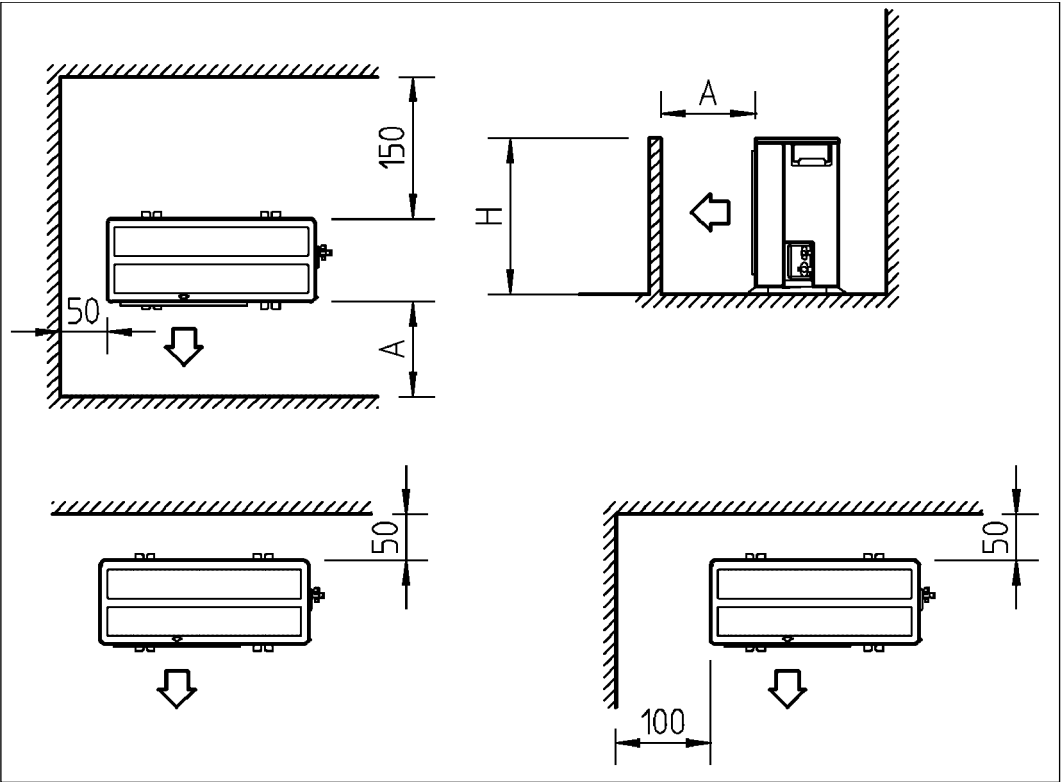
Outlook and dimensions

The illustration below shows the outlook and the dimensions of the unit (mm).



Installation and service space

The illustration below shows the required installation and service space (mm).



| H | A |
|-----------|--------|
| < 1000 mm | 350 mm |
| > 1000 mm | 600 mm |

Components

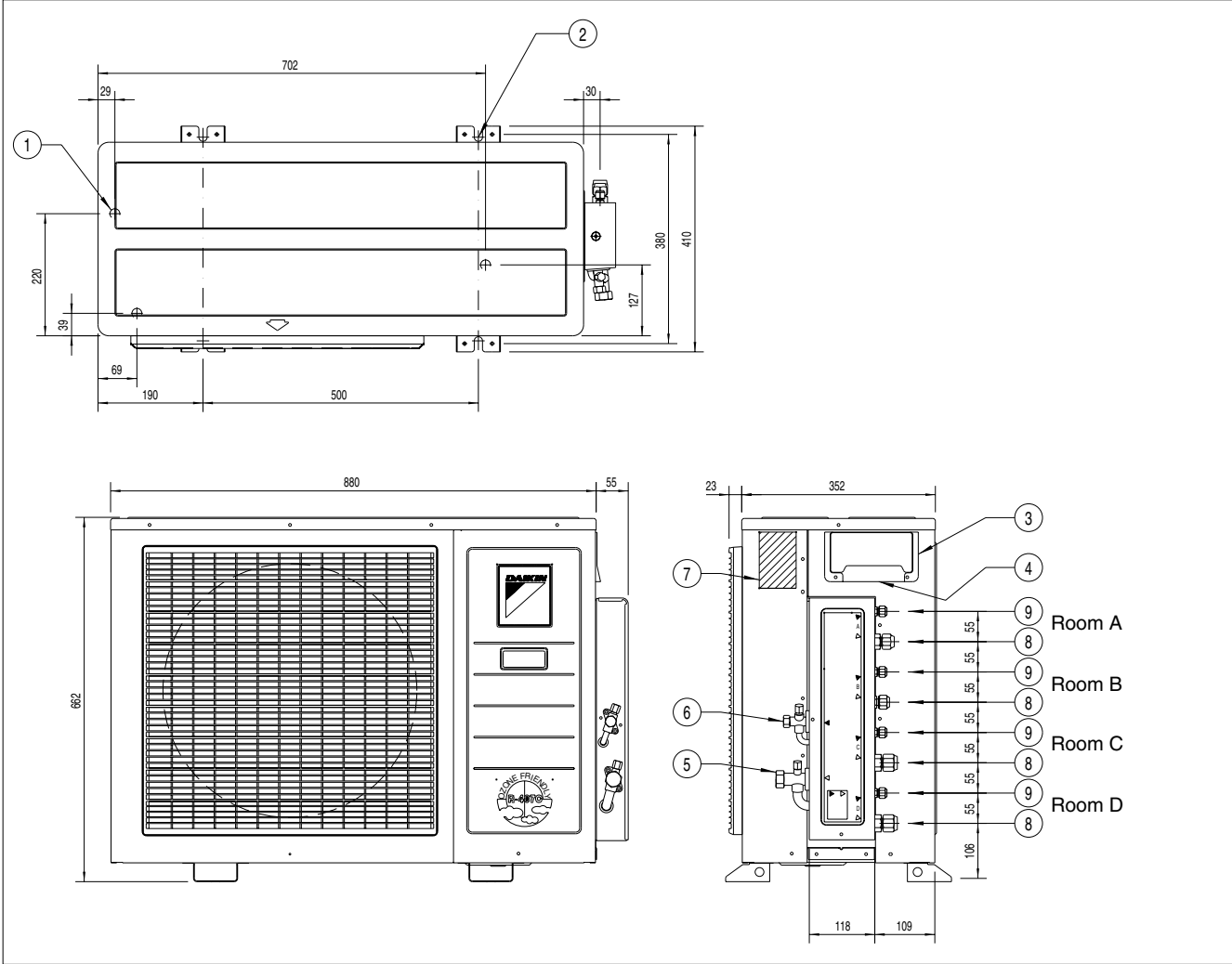
The table below contains the different components of the unit.

| No. | Component |
|-----|--------------------------------|
| 1 | 3 x drain outlet |
| 2 | 4 x hole for anchor bolt (M10) |
| 3 | Service cover |
| 4 | Power intake |
| 5 | Gas stop valve |
| 6 | Liquid stop valve |
| 7 | Service port |
| 8 | Name plate |
| 9 | Outdoor air thermostat |

1.5 MA56GZ7W11

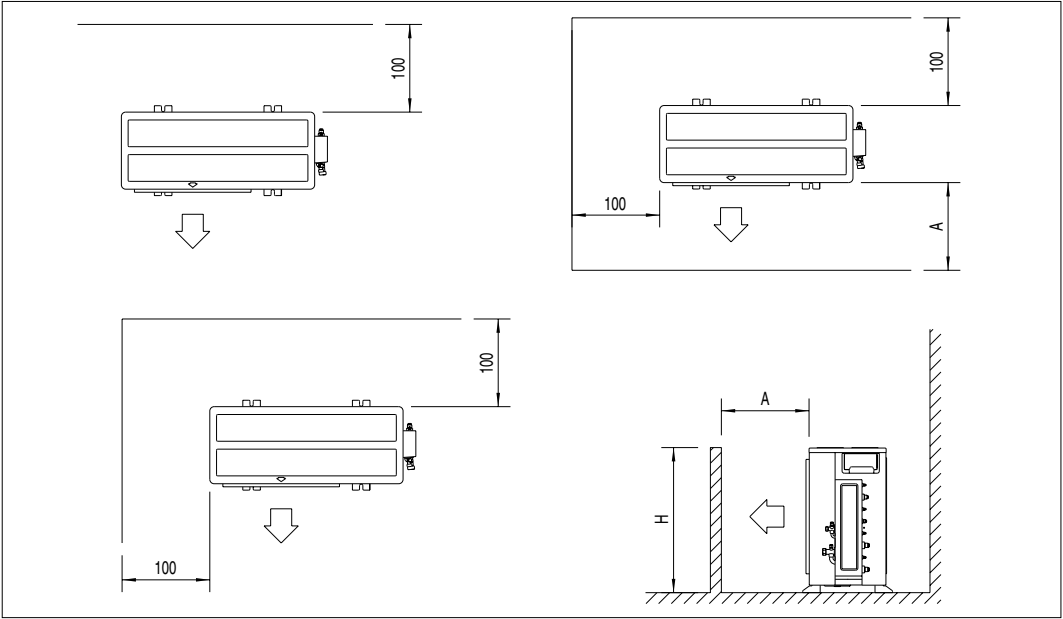
Outlook and dimensions

The illustration below shows the outlook and the dimensions of the unit (mm).



Installation and service space

The illustration below shows the required installation and service space (mm).



| H | A |
|--------|-----|
| ≤ 1000 | 350 |
| > 1000 | 600 |

Components

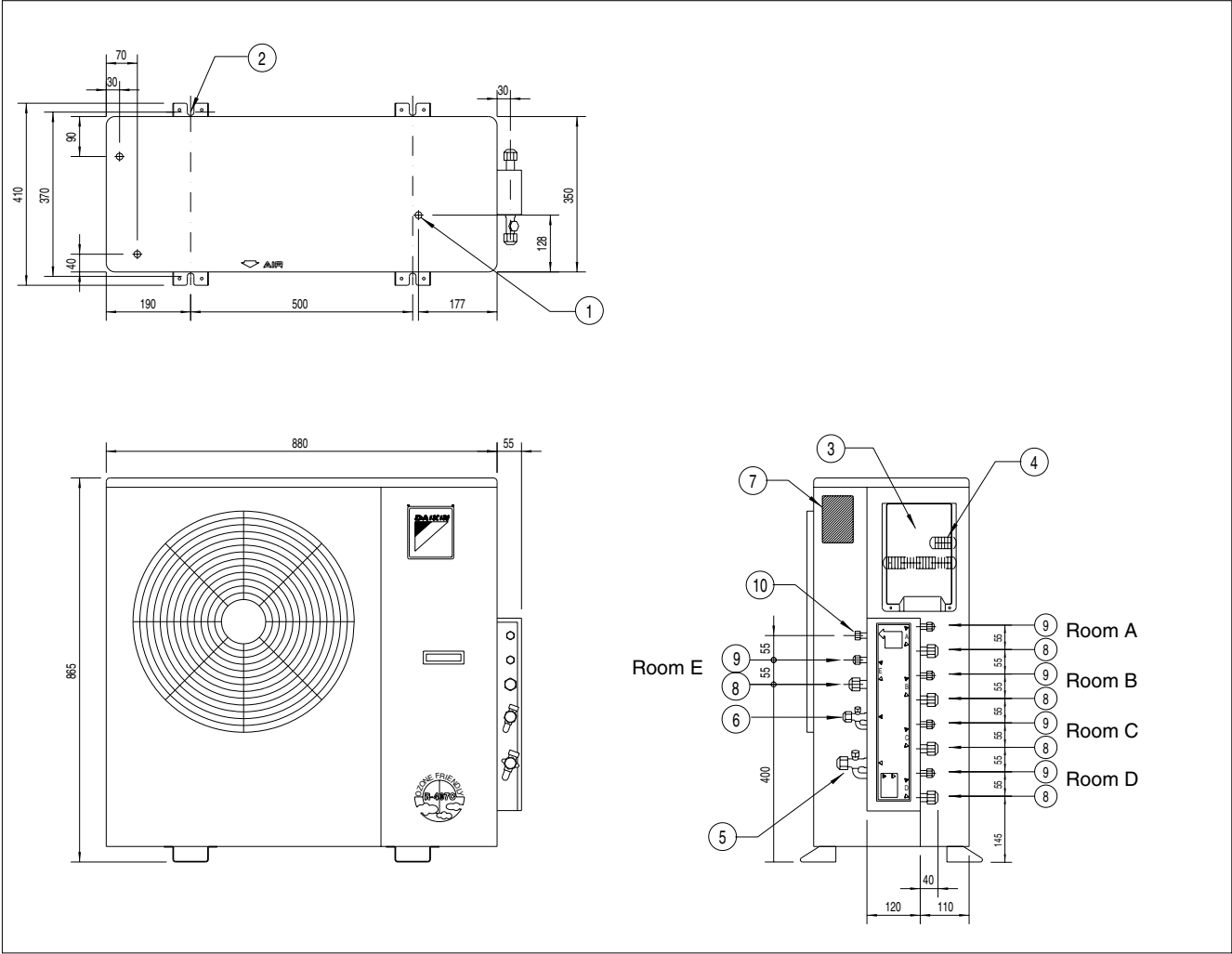
The table below contains the different components of the unit.

| No. | Component |
|-----|-------------------------------------|
| 1 | 3 x drain outlet |
| 2 | 4 x hole for anchor bolt (M10) |
| 3 | Service cover |
| 4 | Power intake |
| 5 | Gas stop valve with service port |
| 6 | Liquid stop valve with service port |
| 7 | Name plate |
| 8 | Gas pipe connection |
| 9 | Liquid pipe connection |

1.6 MA90GZ7W11

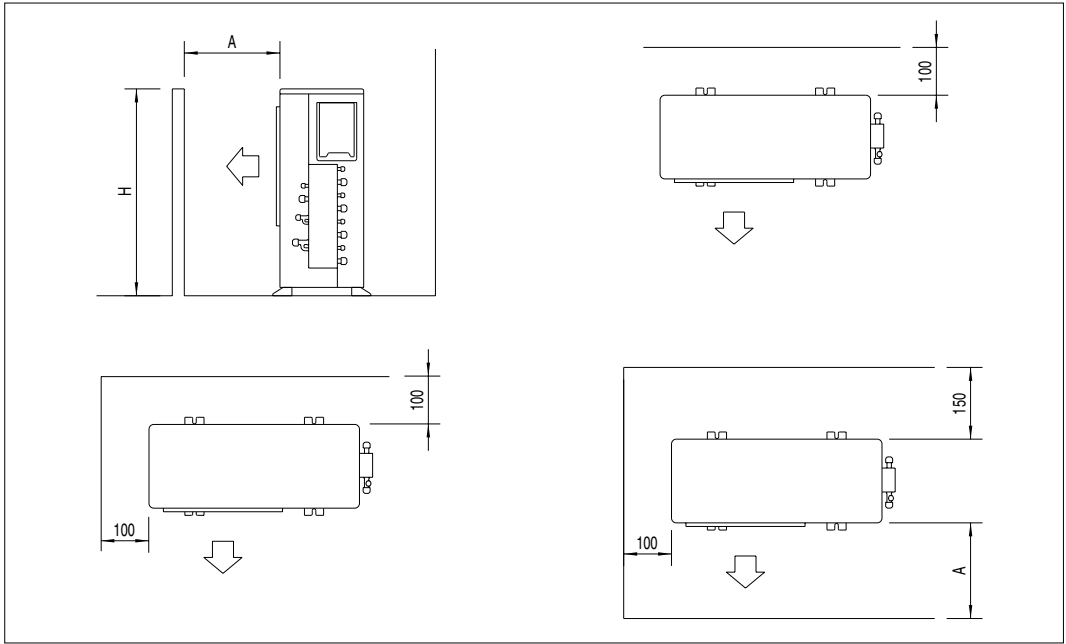
Outlook and dimensions

The illustration below shows the outlook and the dimensions of the unit (mm).



Installation and service space

The illustration below shows the required installation and service space (mm).



Components

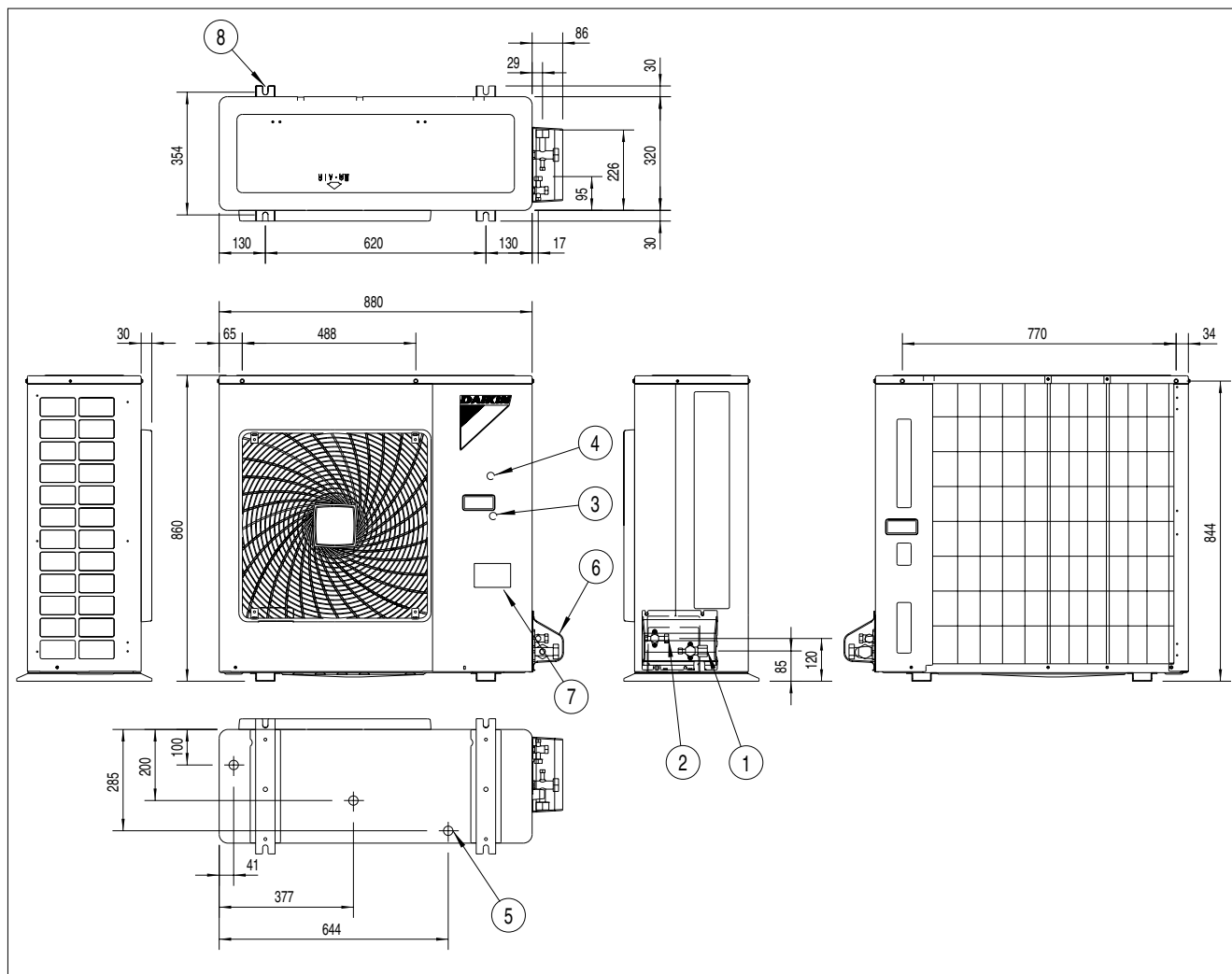
The table below contains the different components of the unit.

| No. | Component |
|-----|--------------------------------------|
| 1 | 3 x drain outlet |
| 2 | 4 x hole for anchor bolt (M8 or M10) |
| 3 | Terminal cover |
| 4 | Grounding terminal |
| 5 | Gas stop valve with service port |
| 6 | Liquid stop valve with service port |
| 7 | Name plate |
| 8 | Gas pipe connection |
| 9 | Liquid pipe connection |
| 10 | Service port |

1.7 RP71B7V1, RP71B7W1, RP71B7T1, RYP71B7V1 and RYP71B7W1

Outlook and dimensions

The illustration below shows the outlook and the dimensions of the unit (mm).



Installation and service space

See page 1-22.

Components

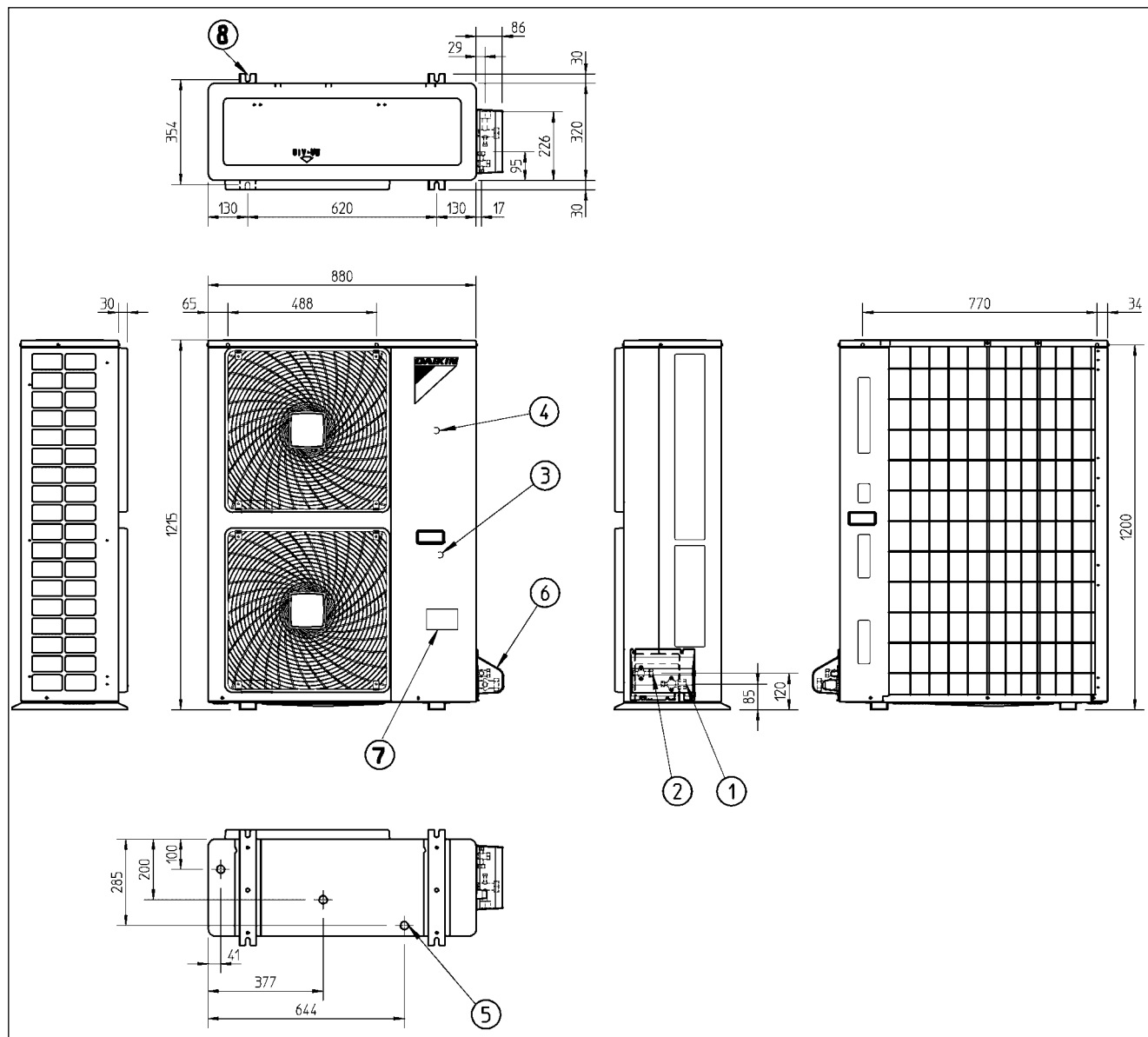
The table below contains the different components of the unit.

| No. | Component |
|-----|---|
| 1 | Gas pipe connection |
| 2 | Liquid pipe connection |
| 3 | Service port (inside the unit) |
| 4 | Grounding terminal M5 (inside the switch box) |
| 5 | 3 x drain outlet |
| 6 | Stop valve cover |
| 7 | Name plate |
| 8 | 4 x hole for anchor bolt (M12) |

1.8 RP100B7V1, RP100B7W1, RP100B7T1, RP125B7W1, RP125B7T1, RYP100B7V1, RYP100B7W1 and RYP125B7W1

Outlook and dimensions

The illustration below shows the outlook and the dimensions of the unit (mm).



Installation and service space

See page 1-22.

Components

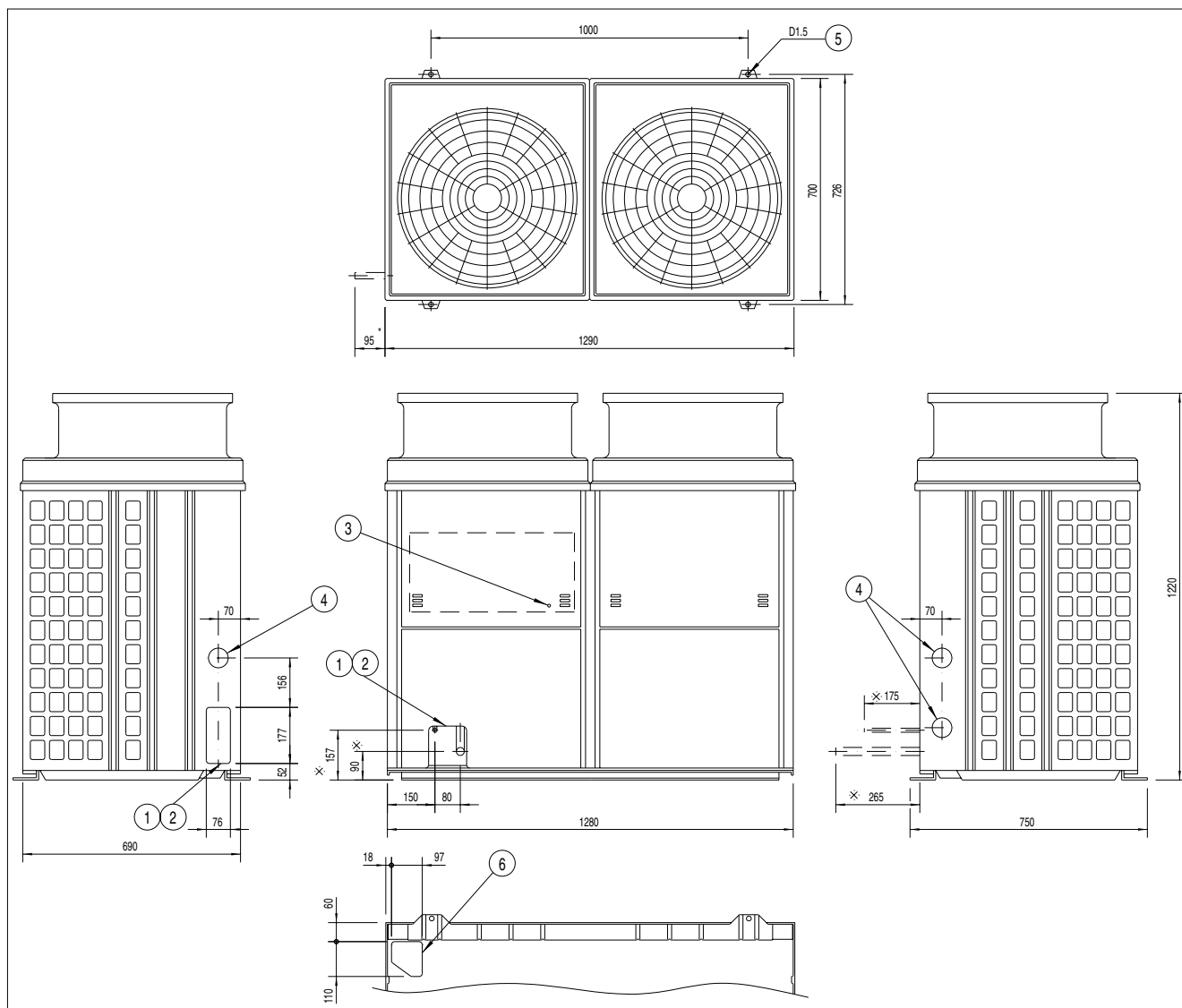
The table below contains the different components of the unit.

| No. | Component |
|-----|---|
| 1 | Gas pipe connection |
| 2 | Liquid pipe connection |
| 3 | Service port (inside the unit) |
| 4 | Grounding terminal M5 (inside the unit) |
| 5 | Drain outlet |
| 6 | Stop valve cover |
| 7 | Name plate |
| 8 | 4 x hole for anchor bolt (M12) |

1.9 RP200B7W1 and RYP200B7W1

Outlook and dimensions

The illustration below shows the outlook and the dimensions of the unit (mm).



Dimensions marked with x show distances after fixing the connection pipes.

Installation and service space

See page 1-24.

Components

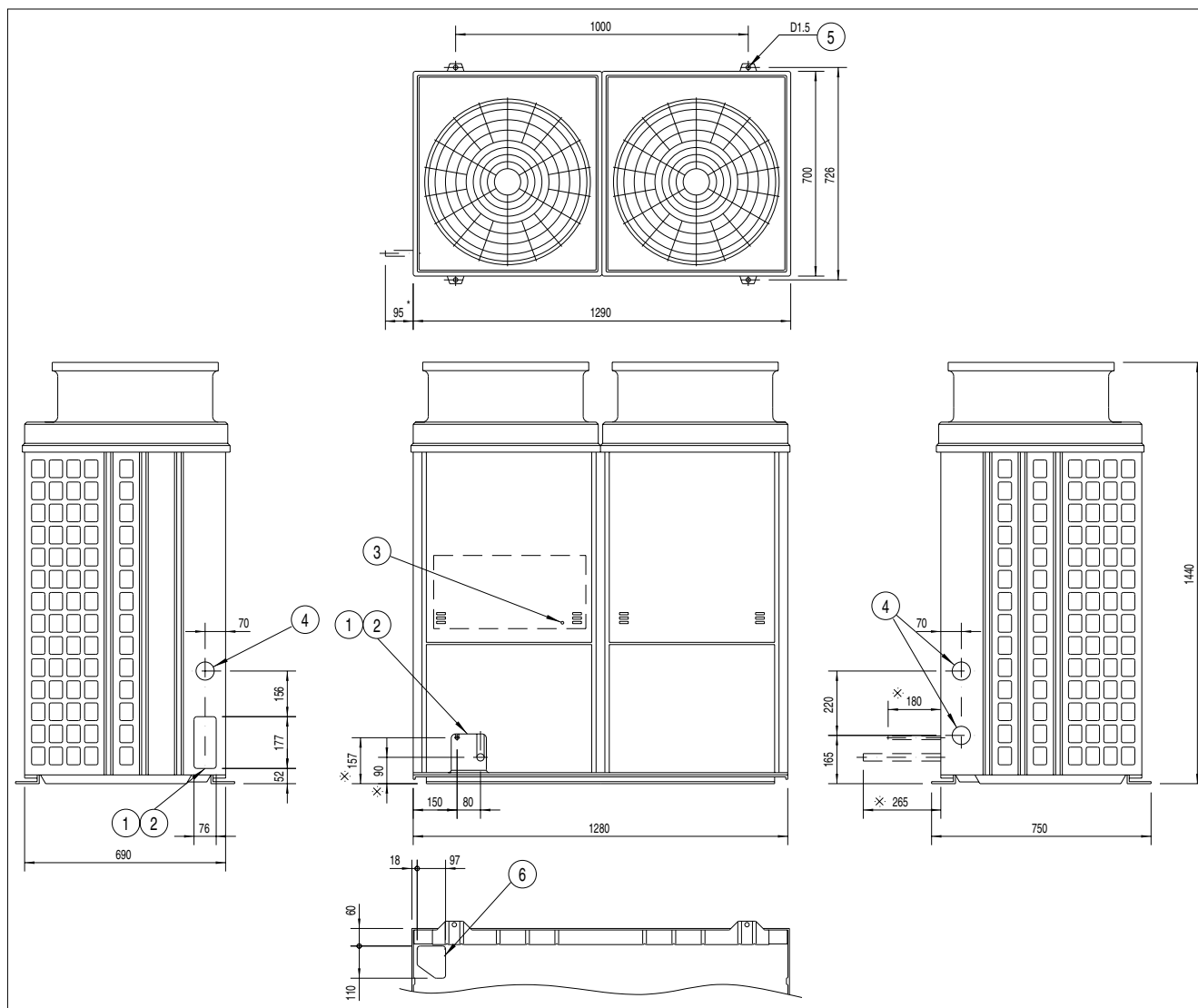
The table below contains the different components of the unit.

| No. | Component |
|-----|-----------------------------|
| 1 | Liquid pipe connection |
| 2 | Gas pipe connection |
| 3 | Grounding terminal |
| 4 | Power supply intake |
| 5 | 4 x foundation hole |
| 6 | Knock hole for lower piping |

1.10 RP250B7W1 and RYP250B7W1

Outlook and dimensions

The illustration below shows the outlook and the dimensions of the unit (mm).



Dimensions marked with x show distances after fixing the connection pipes.

Installation and service space

See page 1–24.

Components

The table below contains the different components of the unit.

| No. | Component |
|-----|-----------------------------|
| 1 | Liquid pipe connection |
| 2 | Gas pipe connection |
| 3 | Grounding terminal |
| 4 | Power supply intake |
| 5 | 4 x foundation hole |
| 6 | Knock hole for lower piping |

1

1.11 RP71B7V1, RP71B7W1, RP71B7T1, RYP71B7V1, RYP71B7W1, RP100B7V1, RP100B7W1, RP100B7T1, RP125B7W1, RP125B7T1, RYP100B7V1, RYP100B7W1 and RYP125B7W1: Installation and Service Space

Non stacked

The illustrations and table below show the required installation and service space (mm). The values in brackets are for the 100 and 125 class.

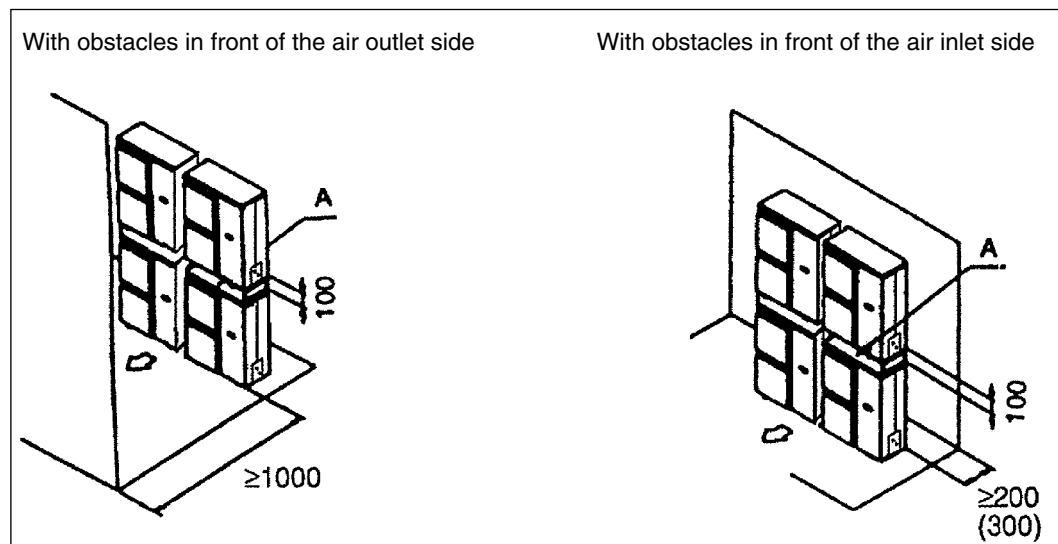
| | ← | → | ↖ | ↗ | ↘ | | A | B1 | B2 | C | D1 | D2 | E | L1/L2 |
|--|---|---|---|---|---|-------|-------|-------------------------|------|-------|----------------|------|-------|----------------------|
| | ✓ | | | | | | | ≥50(100) | | | | | | |
| | ✓ | | | ✓ | ✓ | | ≥100 | ≥100 | | ≥100 | | | | |
| | ✓ | | | ✓ | | ✓ | | ≥100 | | | | ≥800 | ≥1000 | |
| | ✓ | | | ✓ | ✓ | ✓ | ≥150 | ≥150 | | ≥150 | | ≥500 | ≥1000 | |
| | | ✓ | | | | | | | | | ≥500 | | | |
| | | ✓ | | | | ✓ | | | ≥500 | | ≥500 | | ≥1000 | |
| | ✓ | ✓ | | | | | L1<L2 | ≥50(100) | | | ≥500 | | | |
| | | | | | | | L2<L1 | ≥50(100) | | | ≥500 | | | |
| | | | | | | L1<L2 | L1≥H | ≥150(250) | ≥500 | | ≥750 | | ≥1000 | 0<L1≤1/3H 1/3H<L1 |
| | ✓ | ✓ | | | | | H<L1 | L<H | | | | | | |
| | ✓ | | | ✓ | ✓ | | ≥200 | ≥200(300) | | ≥1000 | | | | |
| | ✓ | | | ✓ | ✓ | ✓ | ≥200 | ≥200(300) | | ≥1000 | | ≥500 | ≥1000 | |
| | | ✓ | | | | | | | | | ≥1000 | | | |
| | | ✓ | | | | ✓ | | | ≤500 | | ≥1000 | | ≥1000 | |
| | ✓ | ✓ | | | | | L1<L2 | ≥200(300) | | | ≥1000 | | | |
| | | | | | | | L2<L1 | ≥150(250) ≥2000(300) | | | ≥1000 | | | 0<L1≤1/3H 1/3H<L1 |
| | | | | | | L1<L2 | L1≥H | ≥200(300) | ≤500 | | ≥1000 ≥1250 | | ≥1000 | 0<L1≤1/3H 1/3H<L1 |
| | ✓ | ✓ | | | | | H<L1 | L<H | | | | | | |
| | | | | | | L2<L1 | L2≥H | ≥150(250) ≥200(300) | | | ≥1000 | ≤500 | ≥1000 | 0<L1≤1/3H 1/3H<L1 |
| | | | | | | | H<L2 | L<H | | | | | | |

- ↖ Suction side obstacle
- ↗ Discharge side obstacle
- ↘ Left side obstacle
- ↙ Right side obstacle
- ↘ Top side obstacle
- ✓ Obstacle is present

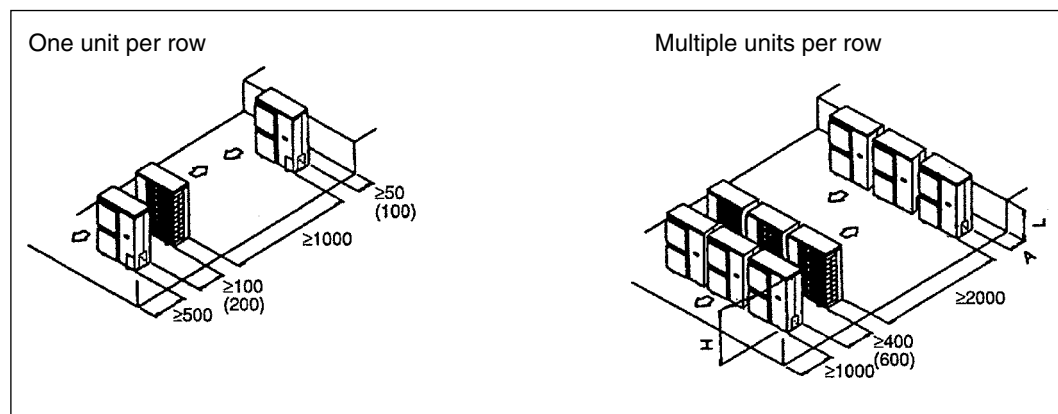
Stacked

The illustration below shows the required installation and service space (mm). The values in brackets are for the 100 and 125 class.

- Do not stack more than one unit.
- ± 1000 mm is required for the drain pipe.
- Seal A in order to prevent outlet air from bypassing.

**Multiple rows**

The illustration below shows the required installation and service space (mm). The values in brackets are for the 100 and 125 class.

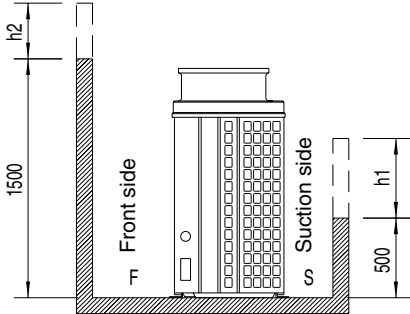


| | L | A |
|-------|-------------------------|-----------|
| L < H | $0 < L \leq 1/2H$ | 150 (250) |
| | $1/2H < L$ | 200 (300) |
| H < L | Installation impossible | |

1.12 RP200B7W1, RP250B7W1, RYP200B7W1 and RYP250B7W1:
Installation and Service Space

Wall height

The illustration below shows the wall height limits (mm).

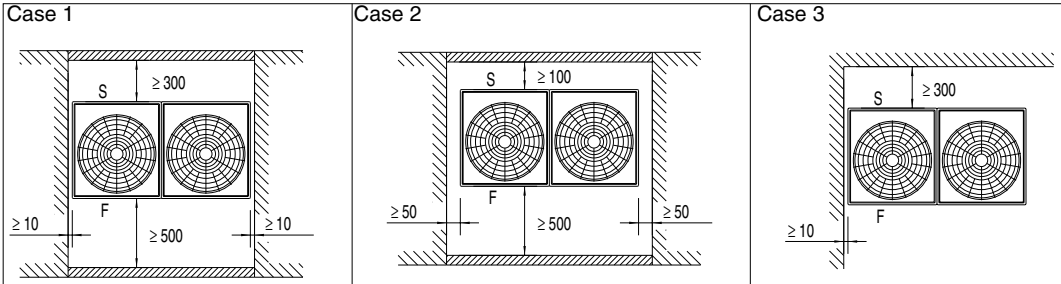


In case 1 or 2:

| If... | Then... |
|-------------------------------|---|
| Frontal wall height > 1500 mm | Add h2/2 to the values mentioned in this section. |
| Suction wall height > 500 mm | Add h1/2 to the values mentioned in this section. |

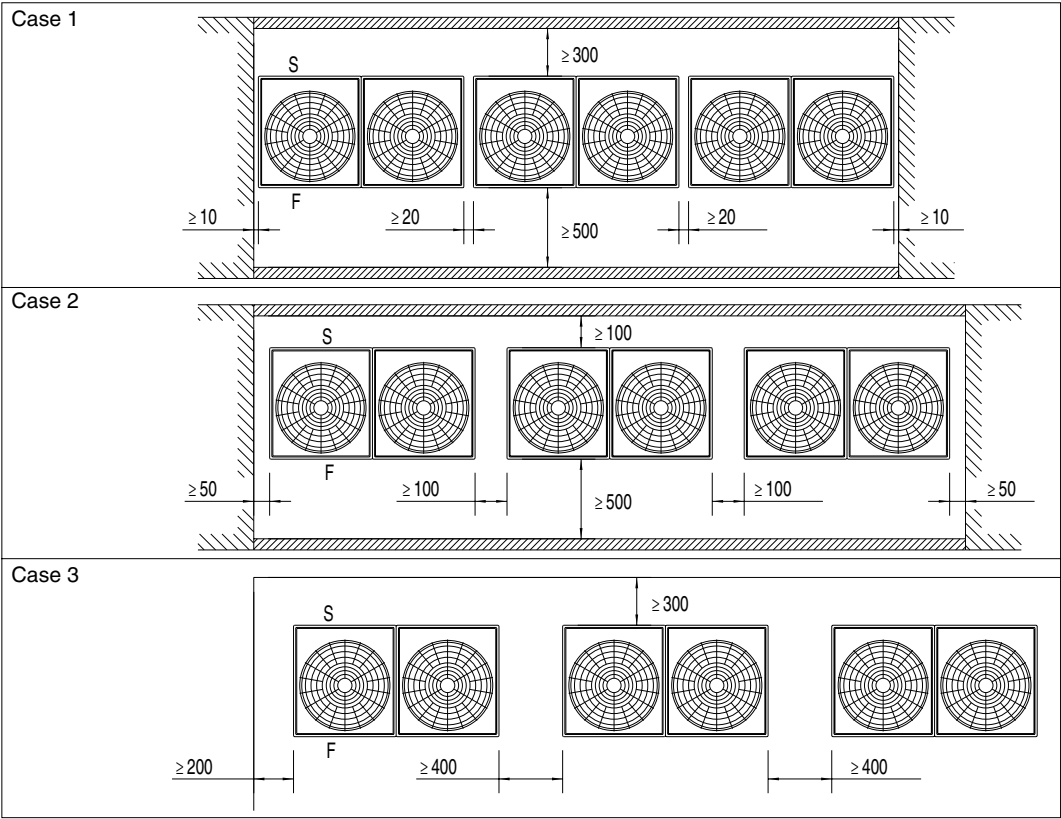
Single installation

The illustration below shows the required installation and service space (mm).



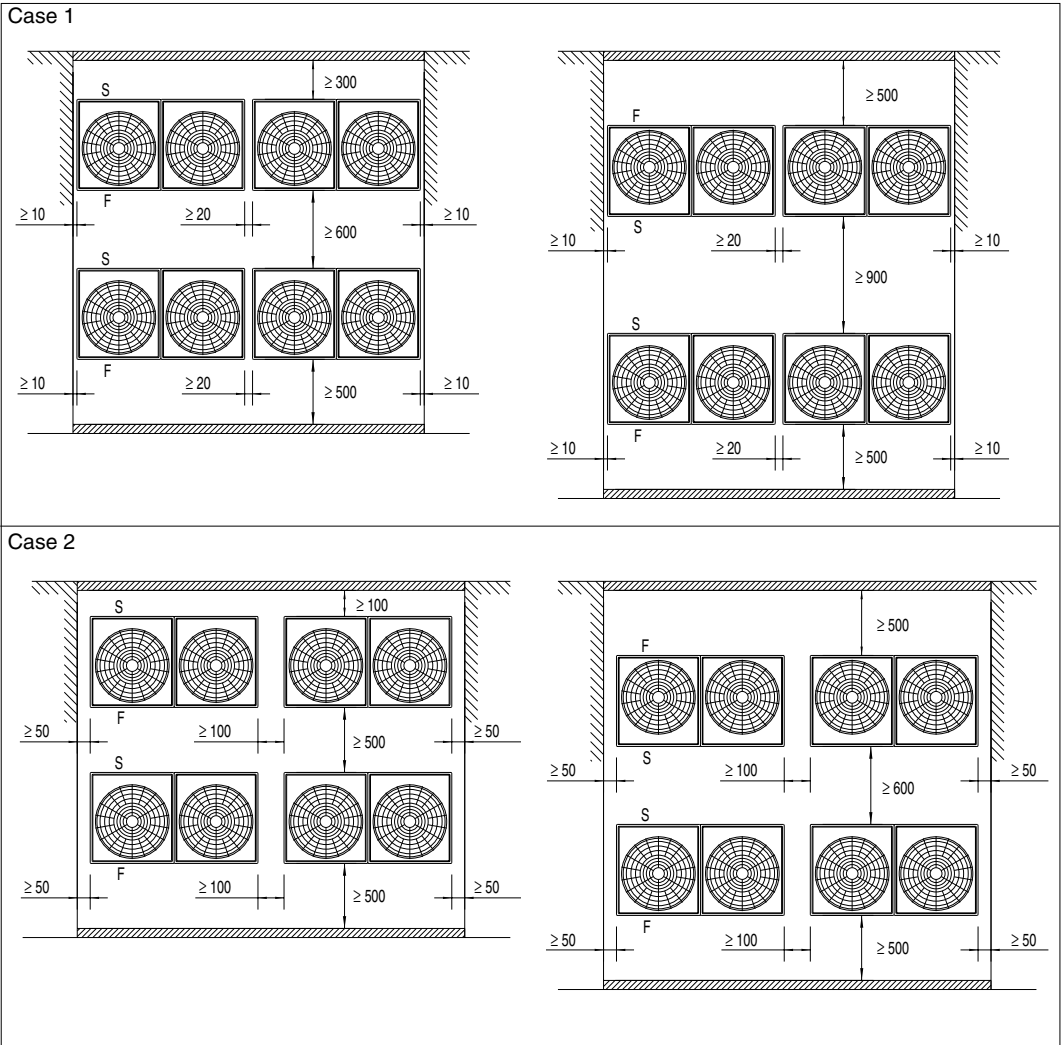
Installation in row

The illustration below shows the required installation and service space (mm).



Concentrated installation

The illustration below shows the required installation and service space (mm).



Air short circuit

If there are multiple units installed, make sure there is no short circuit of air.

1

2 General Outline: Indoor Units

2.1 What Is in This Chapter?

Introduction

This chapter contains the following information on the indoor units:

- Outlook and dimensions
- Installation and service space
- Components.

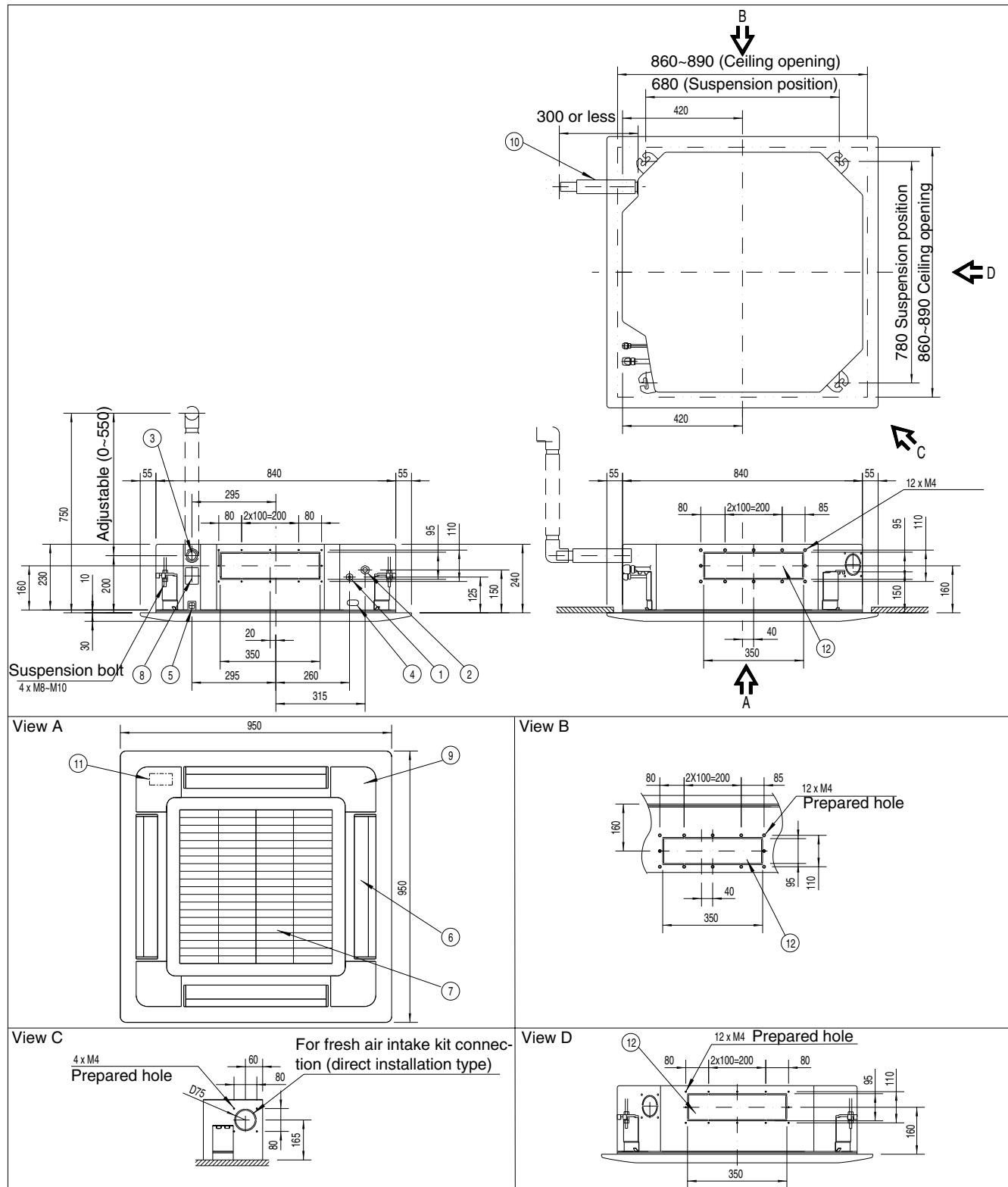
General outline

This chapter contains the following general outlines:

| General outline | See page |
|---|----------|
| 2.2–FHC35BZ7V1, FHC45BZ7V1, FHC60BZ7V1, FHYC35BZ7V1, FHYC45BZ7V1, FHYCP35B7V1, FHYCP45B7V1, FHYCP60B7V1 and FHYCP71B7V1 | 1–28 |
| 2.3–FHYBP35B7V1 and FHYBP45B7V1 | 1–30 |
| 2.4–FHYBP60B7V1 and FHYBP71B7V1 | 1–31 |
| 2.5–FHYBP100B7V1 and FHYBP125B7V1 | 1–32 |
| 2.6–FHYCP100B7V1 and FHYCP125B7V1 | 1–34 |
| 2.7–FDYP125B7V1 | 1–36 |
| 2.8–FDYP200B7V1 and FDYP250B7V1 | 1–37 |
| 2.9–FHYP35BV1 and FHYP45BV1 | 1–38 |
| 2.10–FHYP60BV1 and FHYP71BV1 | 1–40 |
| 2.11–FHYP100BV1 | 1–42 |
| 2.12–FHYP125BV1 | 1–44 |
| 2.13–FUYP71BV17 | 1–46 |
| 2.14–FUYP100BV17 and FUYP125BV17 | 1–48 |
| 2.15–FAYP71BV1 and FAYP100BV1 | 1–50 |
| 2.16–FHYKP35BV1 and FHYKP45BV1 | 1–52 |
| 2.17–FHYKP60BV1 and FHYKP71BV1 | 1–54 |

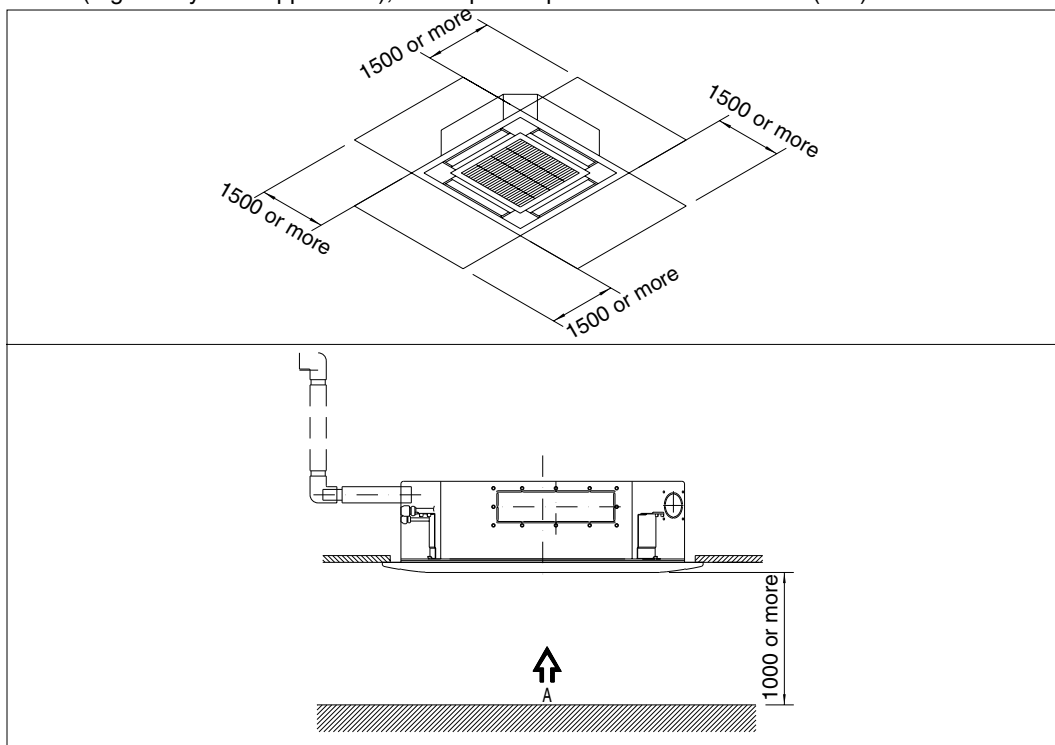
1

The illustration below shows the outlook and the dimensions of the unit (mm).



Installation and service space

The illustration below shows the required installation and service space. When a discharge grille is closed (e.g. 3-way blow application), the required space is 200 mm or more (mm).

**Components**

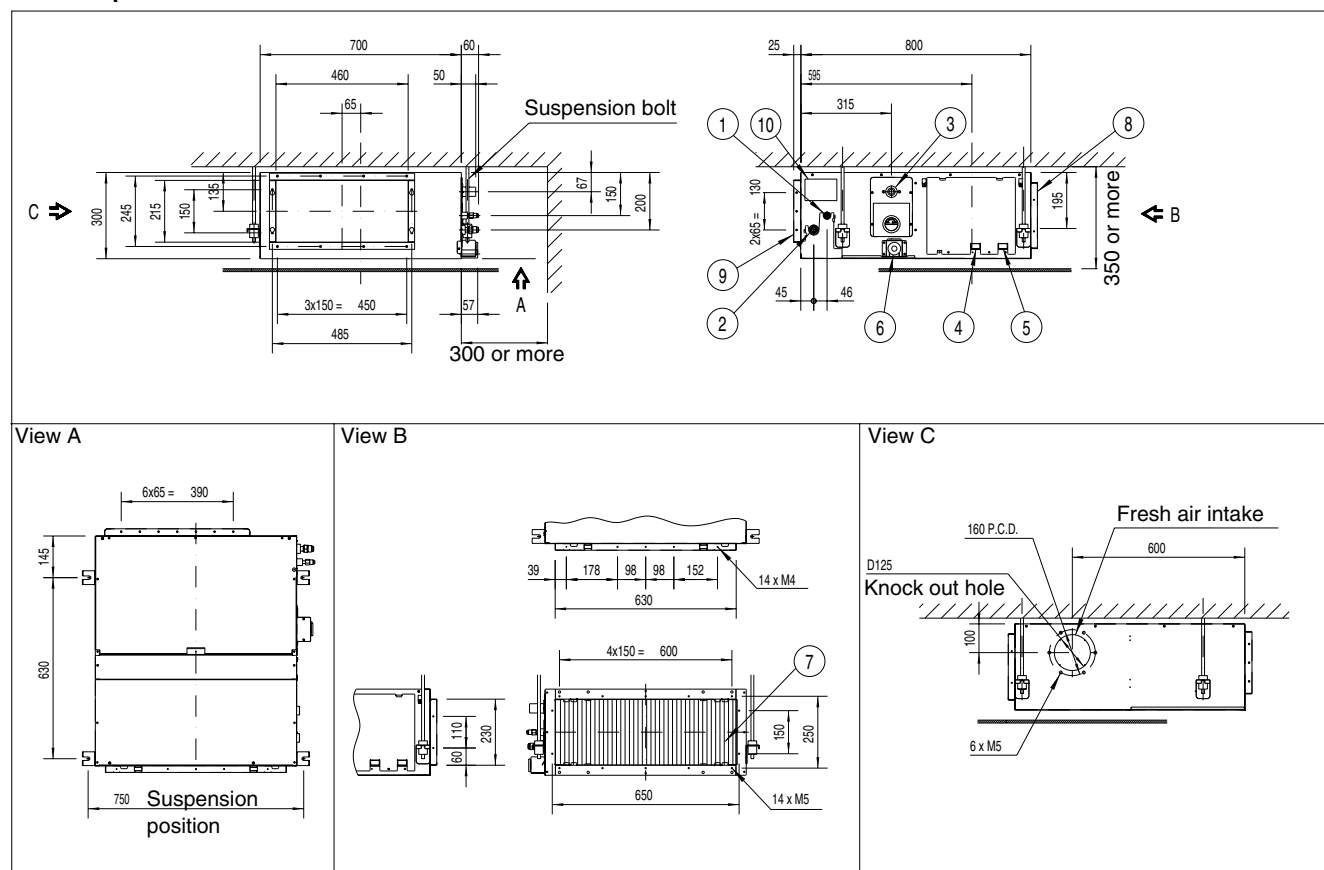
The table below contains the different components of the unit.

| No. | Component |
|-----|---|
| 1 | Liquid pipe connection |
| 2 | Gas pipe connection |
| 3 | Drain pipe connection |
| 4 | Power supply connection |
| 5 | Transmission wiring connection |
| 6 | Air discharge grille |
| 7 | Air suction grille |
| 8 | Water supply intake |
| 9 | Corner decoration cover |
| 10 | Drain hose |
| 11 | In case an infrared remote control is used, this position is a signal receiver. |
| 12 | Branch duct connection |

2.3 FHYBP35B7V1 and FHYBP45B7V1

Outlook, dimensions and installation and service space

The illustration below shows the outlook, the dimensions and the installation and service space of the unit (mm).



Components

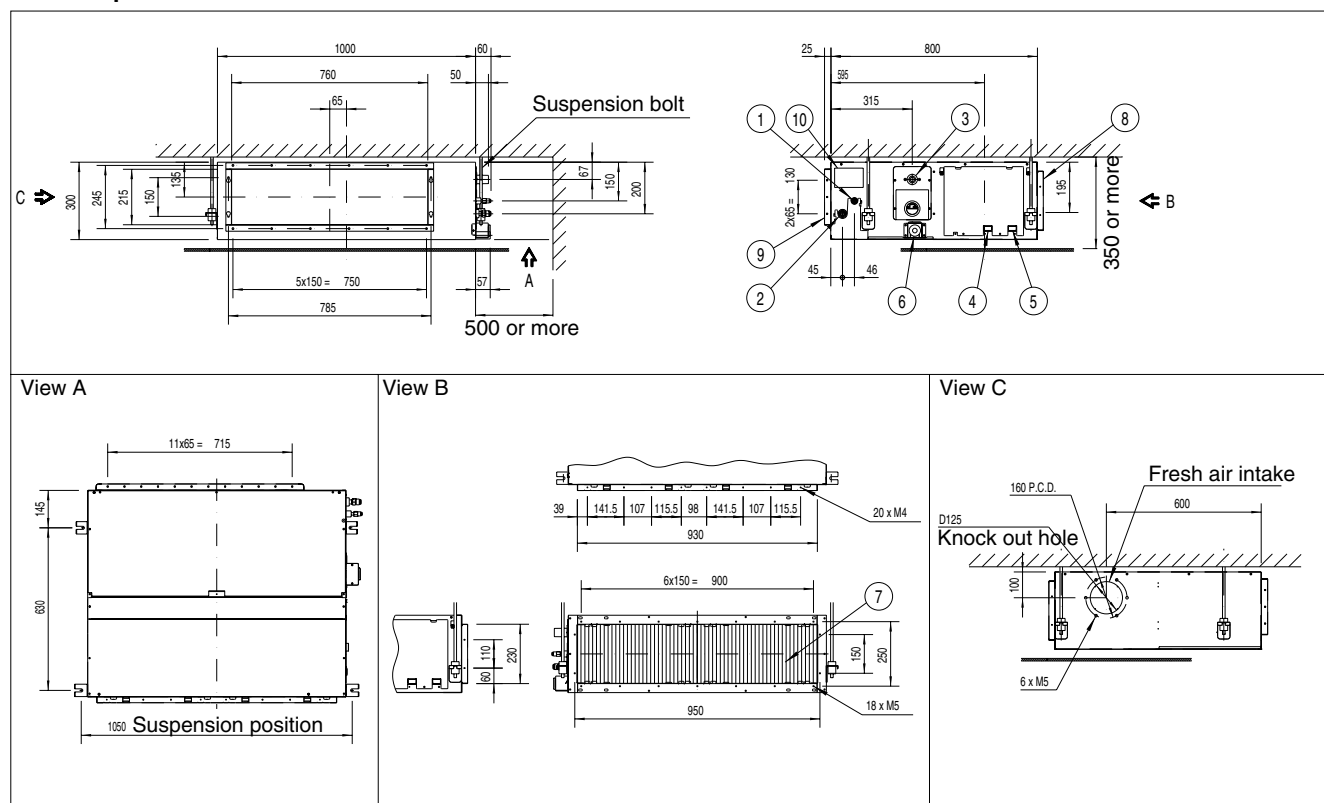
The table below contains the different components of the unit.

| No. | Component |
|-----|--|
| 1 | Liquid pipe connection |
| 2 | Gas pipe connection |
| 3 | Drain pipe connection (O.D. 32 mm, I.D. 25 mm) |
| 4 | Remote control wiring connection |
| 5 | Power supply connection |
| 6 | Drain hole (O.D. 32 mm, I.D. 25 mm) |
| 7 | Air filter |
| 8 | Air suction side |
| 9 | Air discharge side |
| 10 | Name plate |

2.4 FHYBP60B7V1 and FHYBP71B7V1

Outlook, dimensions and installation and service space

The illustration below shows the outlook, the dimensions and the installation and service space of the unit (mm).



Components

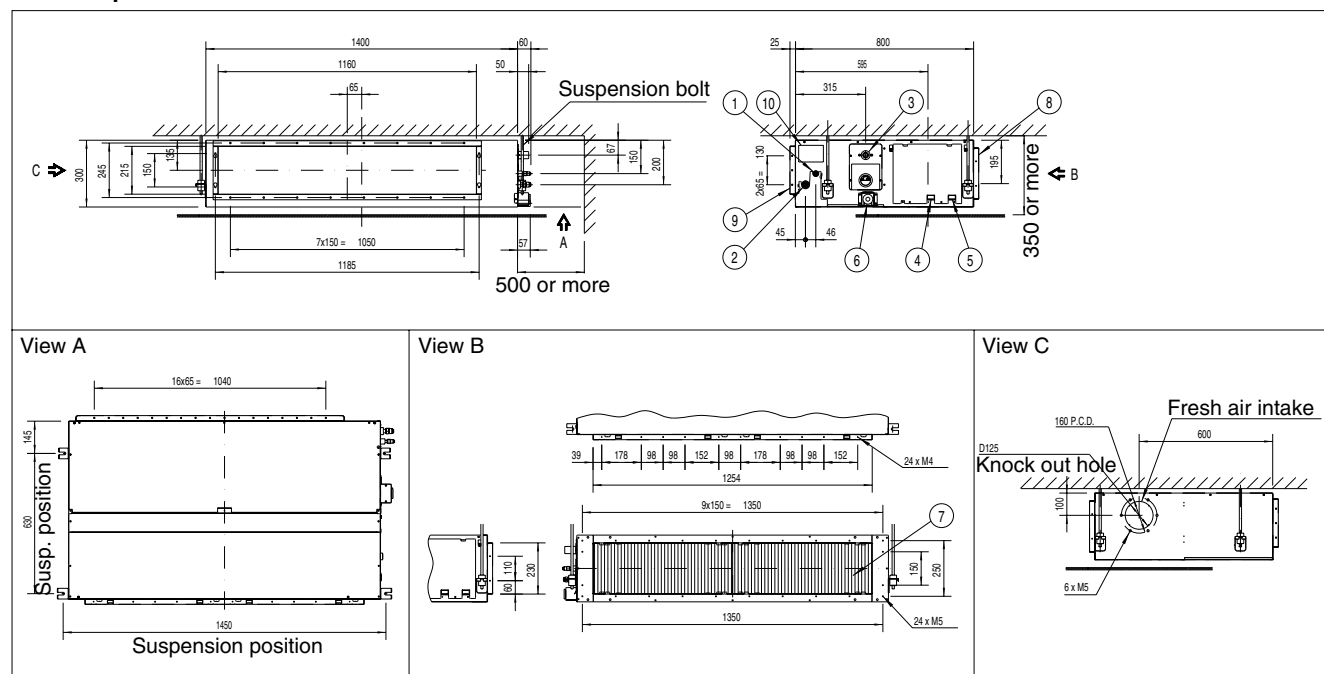
The table below contains the different components of the unit.

| No. | Component |
|-----|--|
| 1 | Liquid pipe connection |
| 2 | Gas pipe connection |
| 3 | Drain pipe connection (O.D. 32 mm, I.D. 25 mm) |
| 4 | Remote control wiring connection |
| 5 | Power supply connection |
| 6 | Drain hole (O.D. 32 mm, I.D. 25 mm) |
| 7 | Air filter |
| 8 | Air suction side |
| 9 | Air discharge side |
| 10 | Name plate |

2.5 FHYBP100B7V1 and FHYBP125B7V1

Outlook, dimensions and installation and service space

The illustration below shows the outlook, the dimensions and the installation and service space of the unit (mm).



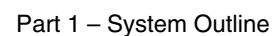
Components

The table below contains the different components of the unit.

| No. | Component |
|-----|--|
| 1 | Liquid pipe connection |
| 2 | Gas pipe connection |
| 3 | Drain pipe connection (O.D. 32 mm, I.D. 25 mm) |
| 4 | Remote control wiring connection |
| 5 | Power supply connection |
| 6 | Drain hole (O.D. 32 mm, I.D. 25 mm) |
| 7 | Air filter |
| 8 | Air suction side |
| 9 | Air discharge side |
| 10 | Name plate |

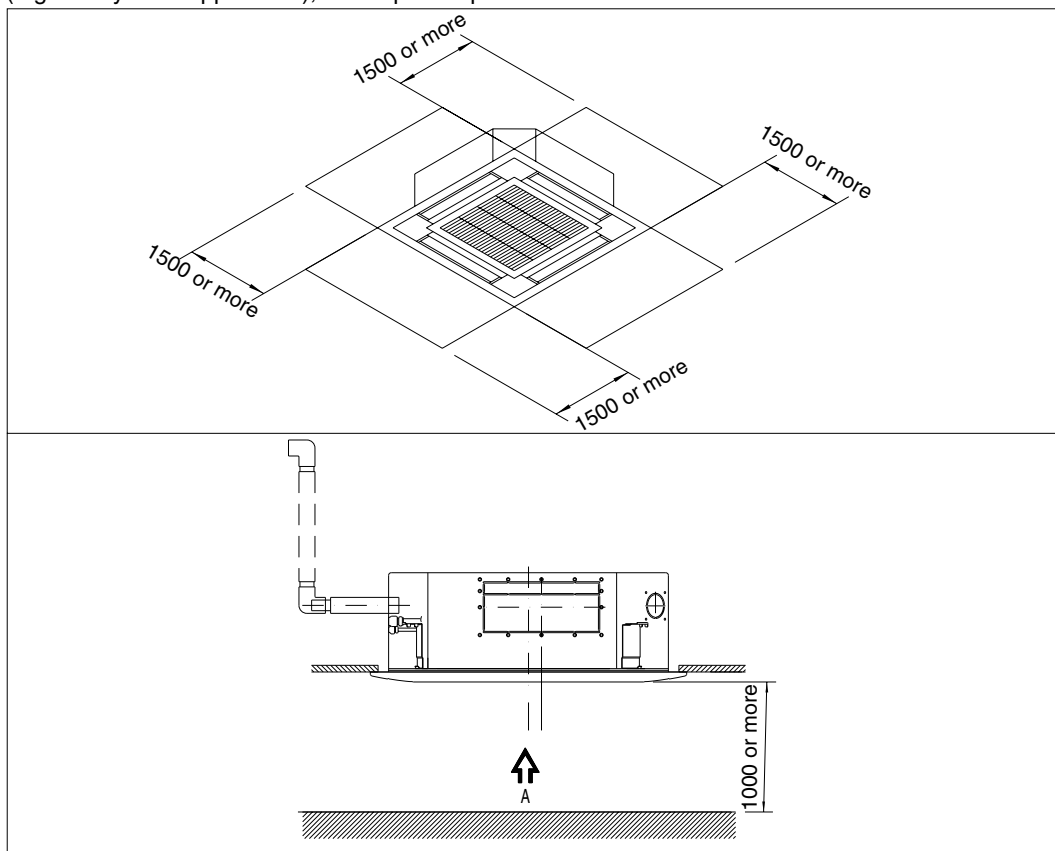
1

The illustration below shows the outlook and the dimensions of the unit (mm).



Installation and service space

The illustration below shows the installation and service space (mm). When a discharge grille is closed (e.g. 3-way blow application), the required space is 200 mm or more.

**Components**

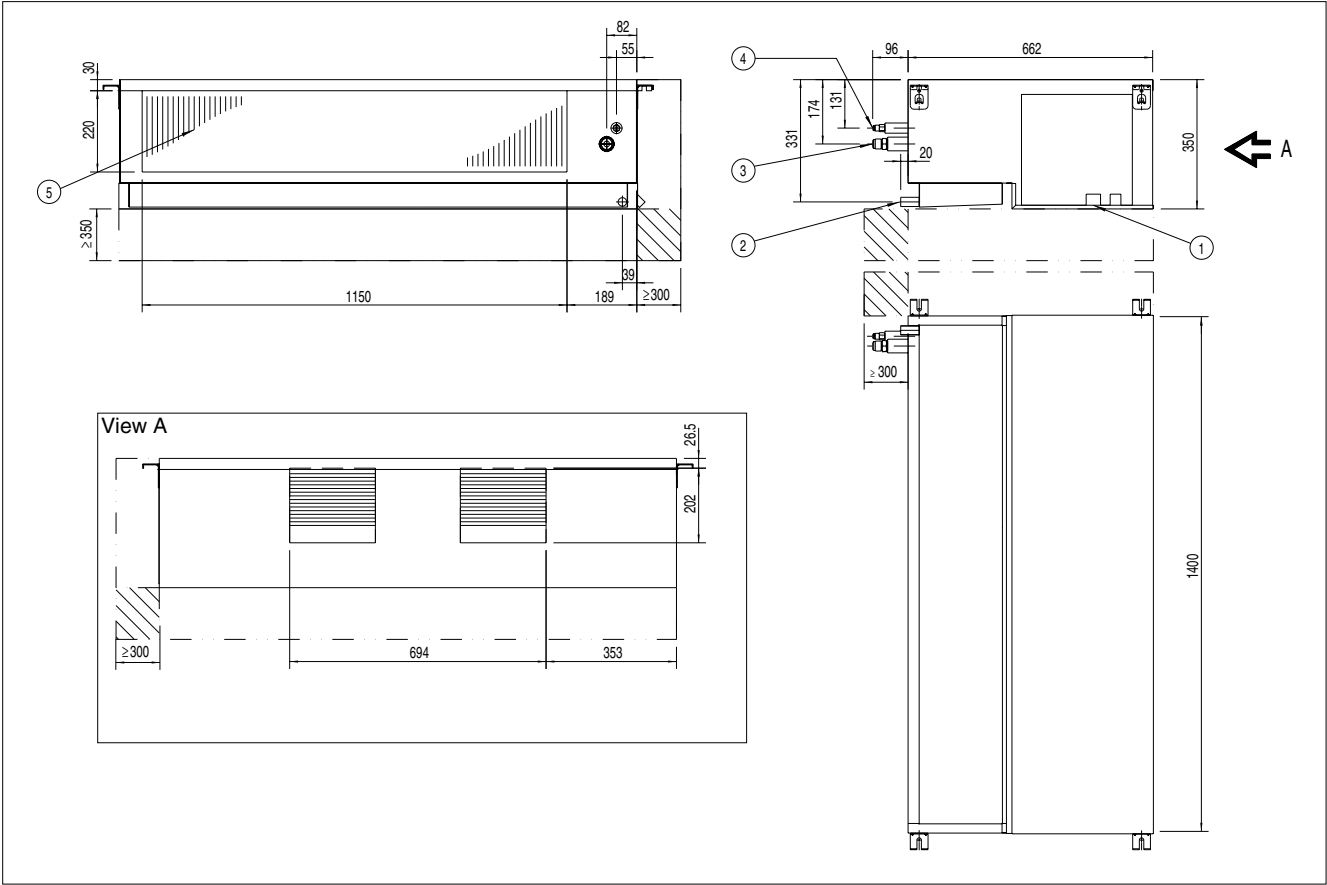
The table below contains the different components of the unit.

| No. | Component |
|-----|---|
| 1 | Liquid pipe connection |
| 2 | Gas pipe connection |
| 3 | Drain pipe connection (O.D. 32 mm, I.D. 25 mm) |
| 4 | Power supply connection |
| 5 | Transmission wiring connection |
| 6 | Air discharge grille |
| 7 | Air suction grille |
| 8 | Water supply intake |
| 9 | Corner decoration cover |
| 10 | Drain hose (O.D. 32 mm) |
| 11 | In case an infrared remote control is used, this position is a signal receiver. |
| 12 | Branch duct connection |

2.7 FDYP125B7V1

Outlook, dimensions and installation and service space

The illustration below shows the outlook, the dimensions and the installation and service space of the unit (mm).



Components

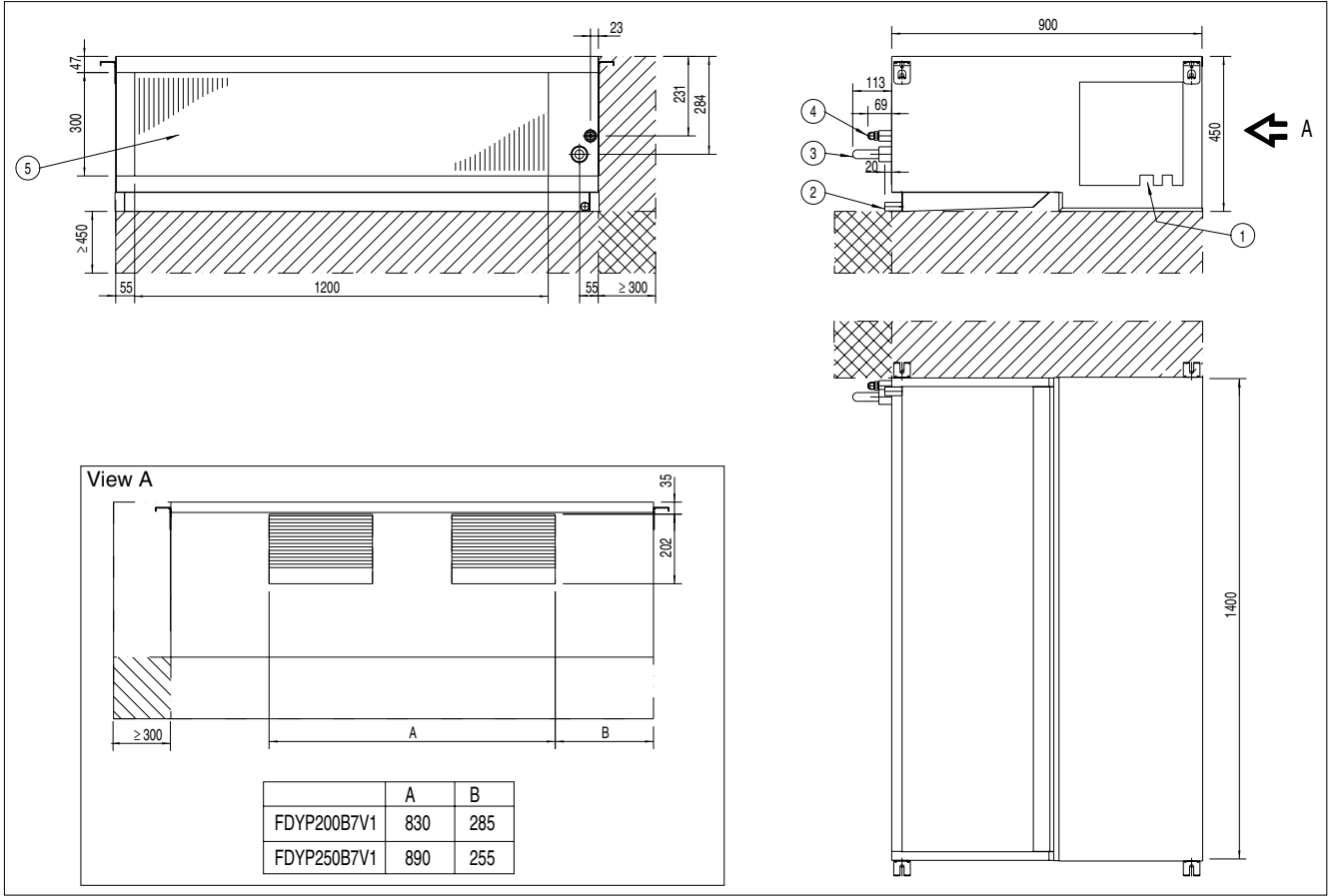
The table below contains the different components of the unit.

| No. | Component |
|-----|-------------------------------|
| 1 | Power supply intake |
| 2 | Drain connection (O.D. 25 mm) |
| 3 | Gas pipe connection |
| 4 | Liquid pipe connection |
| 5 | Filter |

2.8 FDYP200B7V1 and FDYP250B7V1

Outlook, dimensions and installation and service space

The illustration below shows the outlook, the dimensions and the installation and service space of the unit (mm).



Service space

Extra service space for optional drain pump

Components

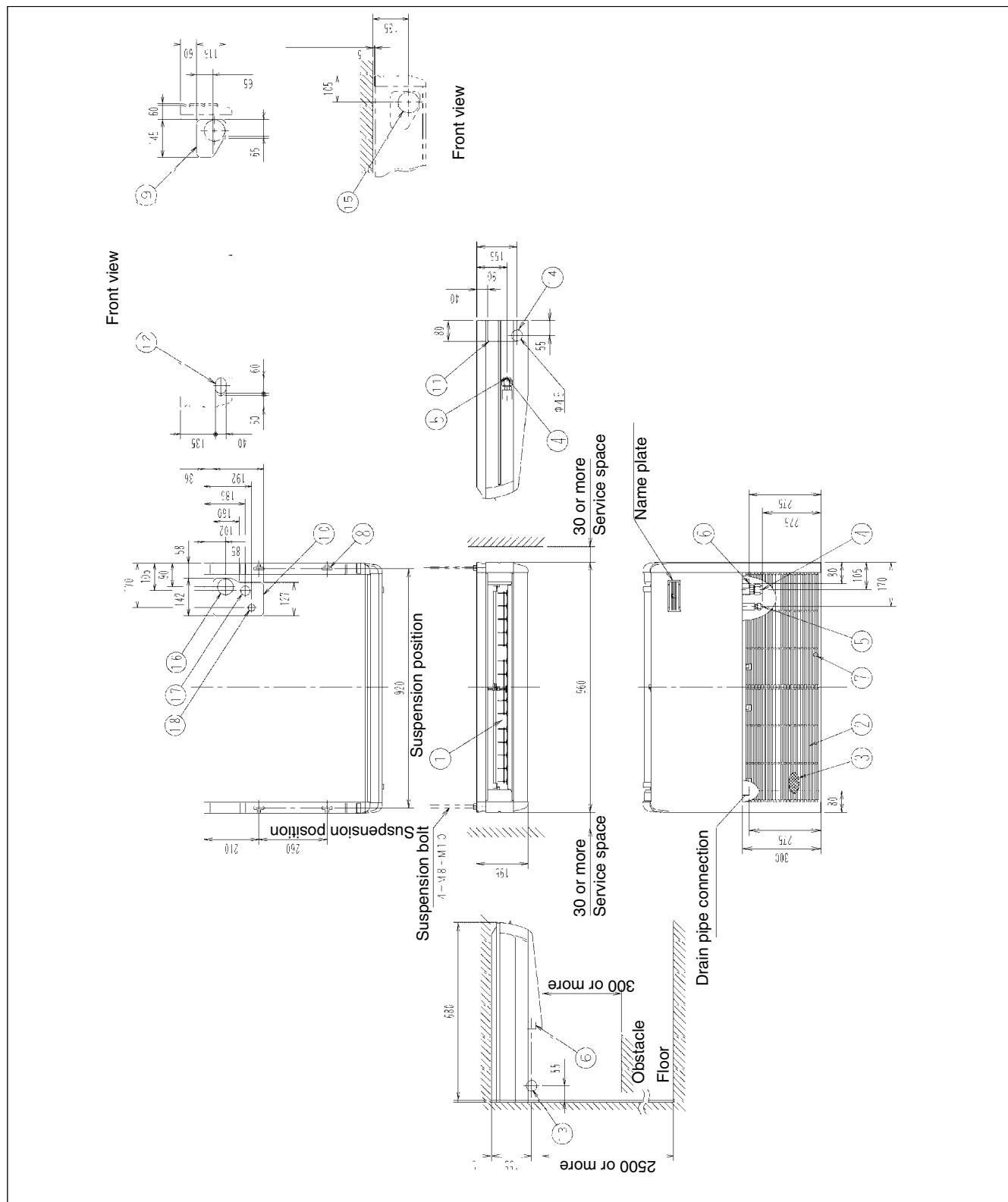
The table below contains the different components of the unit.

| No. | Component |
|-----|-------------------------------|
| 1 | Power supply intake |
| 2 | Drain connection (O.D. 25 mm) |
| 3 | Gas pipe connection |
| 4 | Liquid pipe connection |
| 5 | Filter |

2.9 FHYP35BV1 and FHYP45BV1

Outlook and dimensions

The illustration below shows the outlook, the dimensions and the installation and service space of the unit (mm).



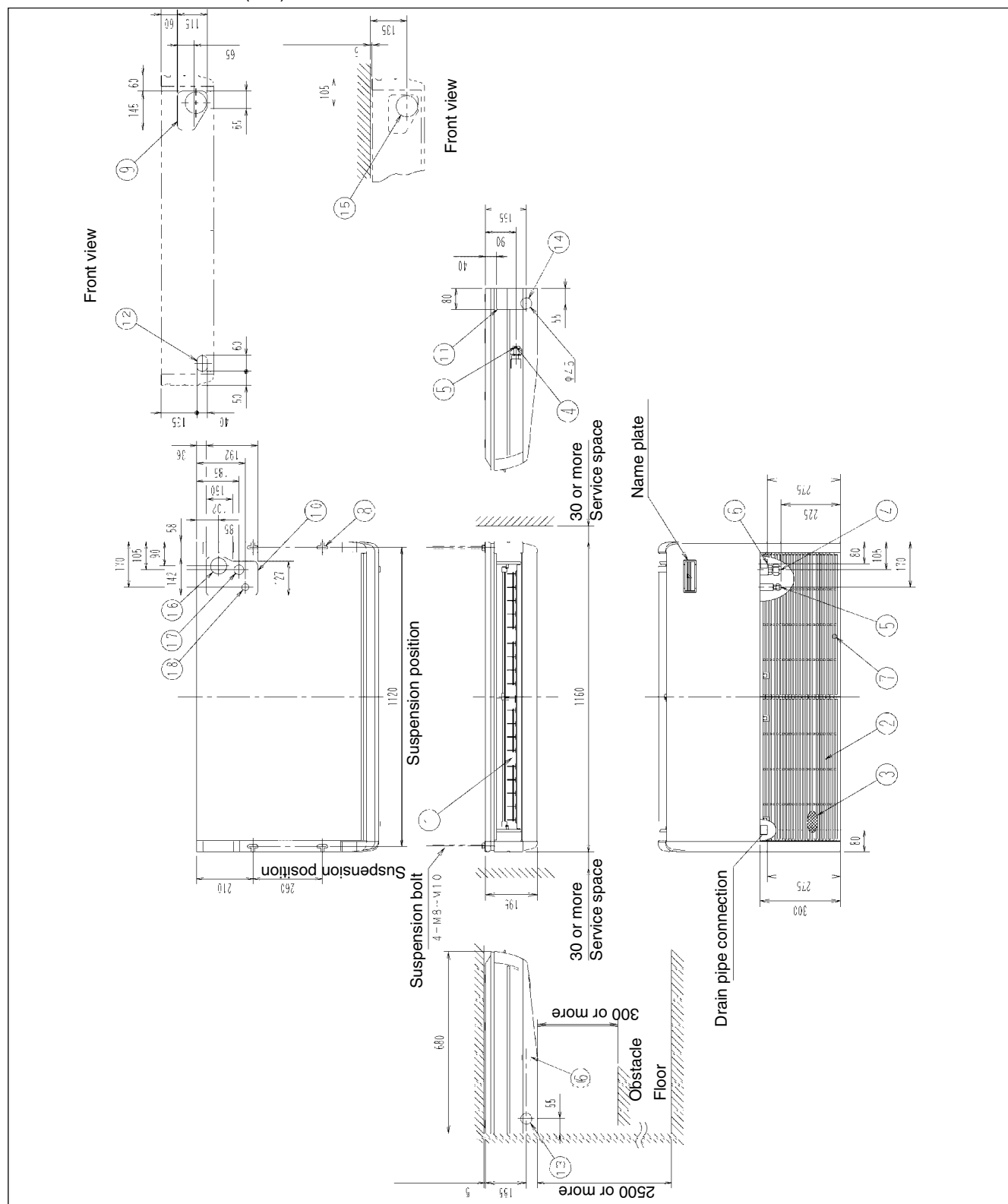
Components

The table below contains the different components of the unit.

| No. | Component |
|-----|--|
| 1 | Air discharge grille |
| 2 | Air suction grille |
| 3 | Air filter |
| 4 | Gas pipe connection |
| 5 | Liquid pipe connection |
| 6 | Drain pipe connection |
| 7 | Grounding terminal (inside the electric components box) M4 |
| 8 | Suspension bracket |
| 9 | Backward piping and wiring connection opening lid |
| 10 | Upward piping and wiring connection opening lid |
| 11 | Right side pipe connection (slit hole) |
| 12 | Left back drain pipe connection (slit hole) |
| 13 | Left side drain pipe connection (slit hole) |
| 14 | Right side drain pipe connection (slit hole) |
| 15 | Wall hole for taking out in piping back (Ø 100 mm) |
| 16 | Upward drain pipe connection (Ø 60 mm) |
| 17 | Upward gas pipe connection (Ø 36 mm) |
| 18 | Upward liquid pipe connection (Ø 26 mm) |
| — | Name plate: In case of an infrared remote control, this position is a signal receiver. |

1

The illustration below shows the outlook, the dimensions and the installation and service space of the unit (mm).



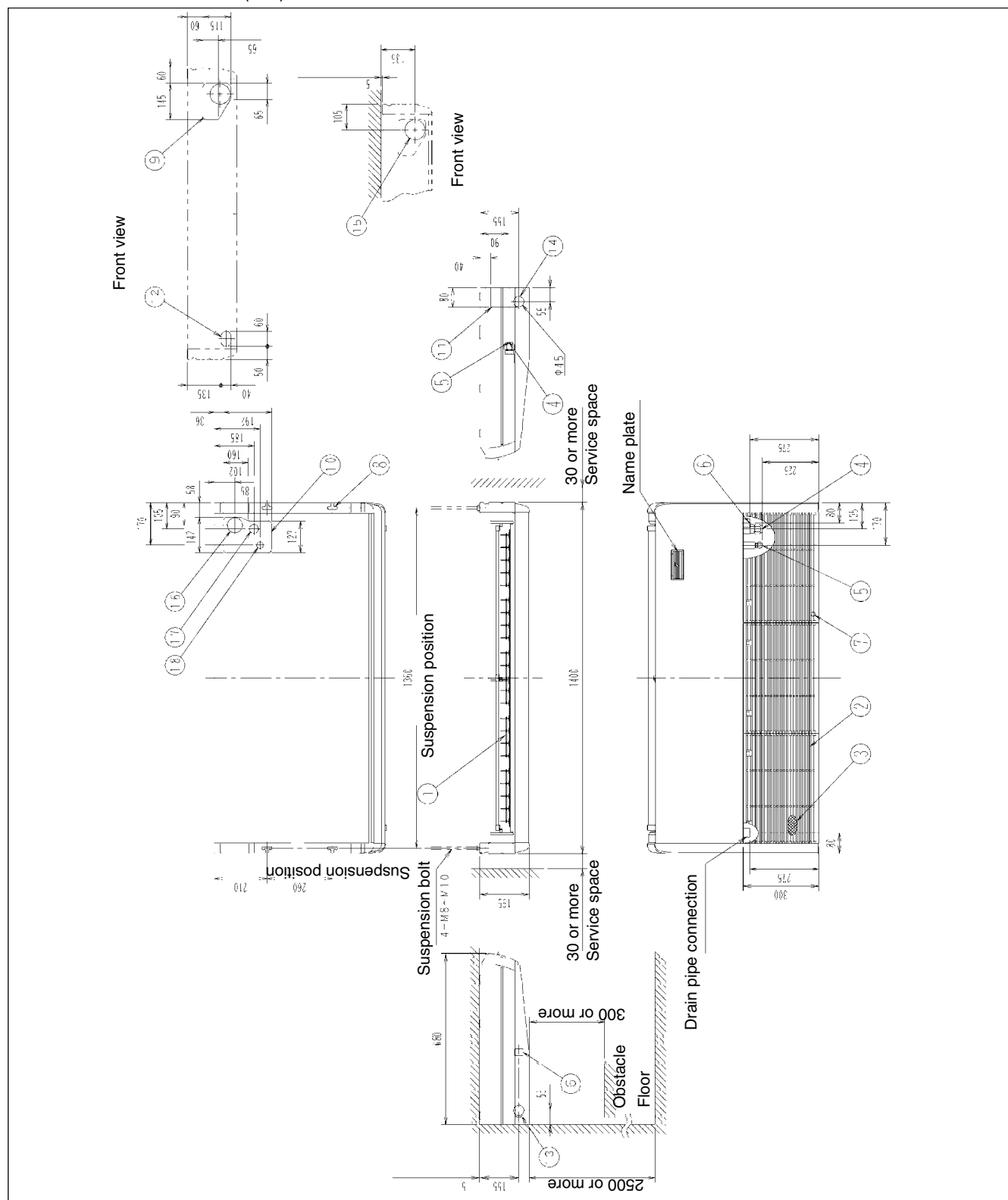
Components

The table below contains the different components of the unit.

| No. | Component |
|-----|--|
| 1 | Air discharge grille |
| 2 | Air suction grille |
| 3 | Air filter |
| 4 | Gas pipe connection |
| 5 | Liquid pipe connection |
| 6 | Drain pipe connection |
| 7 | Grounding terminal (inside the electric components box) M4 |
| 8 | Suspension bracket |
| 9 | Backward piping and wiring connection opening lid |
| 10 | Upward piping and wiring connection opening lid |
| 11 | Right side pipe connection (slit hole) |
| 12 | Left back drain pipe connection (slit hole) |
| 13 | Left side drain pipe connection (slit hole) |
| 14 | Right side drain pipe connection (slit hole) |
| 15 | Wall hole for taking out in piping back (Ø 100 mm) |
| 16 | Upward drain pipe connection (Ø 60 mm) |
| 17 | Upward gas pipe connection (Ø 36 mm) |
| 18 | Upward liquid pipe connection (Ø 26 mm) |
| — | Name plate: In case of an infrared remote control, this position is a signal receiver. |

1

The illustration below shows the outlook, the dimensions and the installation and service space of the unit (mm).



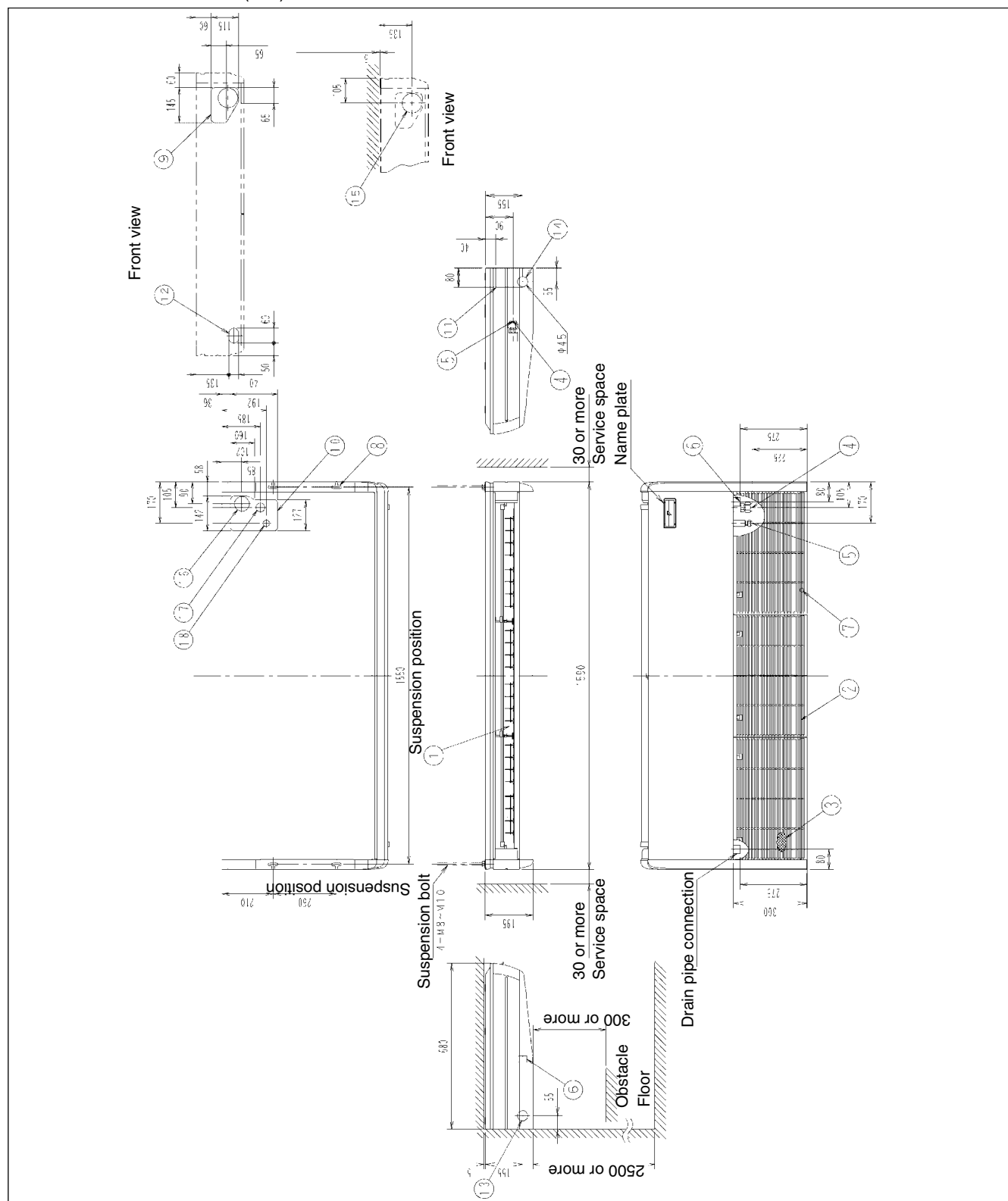
Components

The table below contains the different components of the unit.

| No. | Component |
|-----|--|
| 1 | Air discharge grille |
| 2 | Air suction grille |
| 3 | Air filter |
| 4 | Gas pipe connection |
| 5 | Liquid pipe connection |
| 6 | Drain pipe connection |
| 7 | Grounding terminal (inside the electric components box) M4 |
| 8 | Suspension bracket |
| 9 | Backward piping and wiring connection opening lid |
| 10 | Upward piping and wiring connection opening lid |
| 11 | Right side pipe connection (slit hole) |
| 12 | Left back drain pipe connection (slit hole) |
| 13 | Left side drain pipe connection (slit hole) |
| 14 | Right side drain pipe connection (slit hole) |
| 15 | Wall hole for taking out in piping back (Ø 100 mm) |
| 16 | Upward drain pipe connection (Ø 60 mm) |
| 17 | Upward gas pipe connection (Ø 36 mm) |
| 18 | Upward liquid pipe connection (Ø 26 mm) |
| — | Name plate: In case of an infrared remote control, this position is a signal receiver. |

1

The illustration below shows the outlook, the dimensions and the installation and service space of the unit (mm).



Components

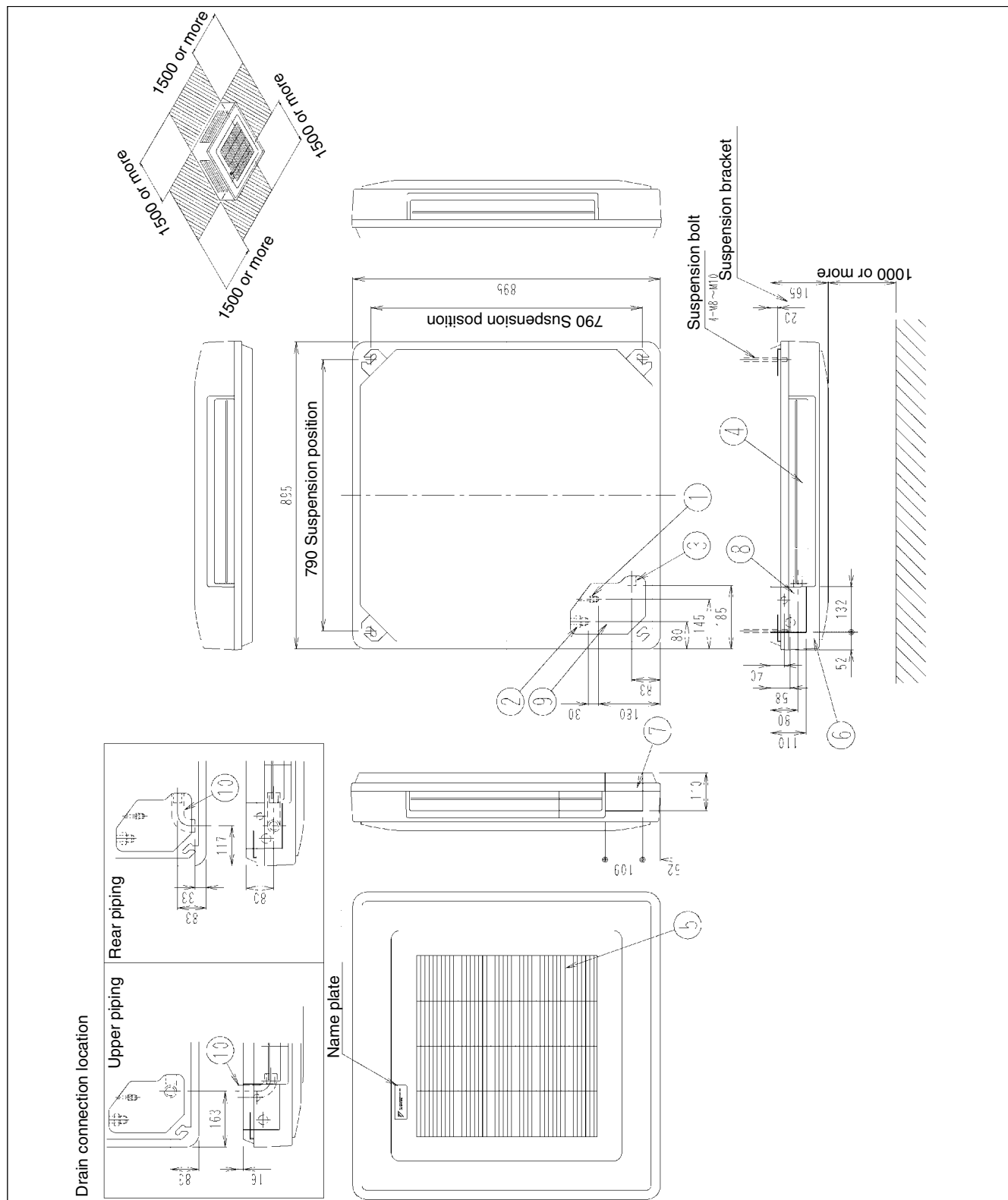
The table below contains the different components of the unit.

| No. | Component |
|-----|--|
| 1 | Air discharge grille |
| 2 | Air suction grille |
| 3 | Air filter |
| 4 | Gas pipe connection |
| 5 | Liquid pipe connection |
| 6 | Drain pipe connection |
| 7 | Grounding terminal (inside the electric components box) M4 |
| 8 | Suspension bracket |
| 9 | Backward piping and wiring connection opening lid |
| 10 | Upward piping and wiring connection opening lid |
| 11 | Right side pipe connection (slit hole) |
| 12 | Left back drain pipe connection (slit hole) |
| 13 | Left side drain pipe connection (slit hole) |
| 14 | Right side drain pipe connection (slit hole) |
| 15 | Wall hole for taking out in piping back (Ø 100 mm) |
| 16 | Upward drain pipe connection (Ø 60 mm) |
| 17 | Upward gas pipe connection (Ø 36 mm) |
| 18 | Upward liquid pipe connection (Ø 26 mm) |
| — | Name plate: In case of an infrared remote control, this position is a signal receiver. |

2.13 FUYP71BV17

Outlook and dimensions

The illustration below shows the outlook, the dimensions and the installation and service space of the unit (mm).



Components

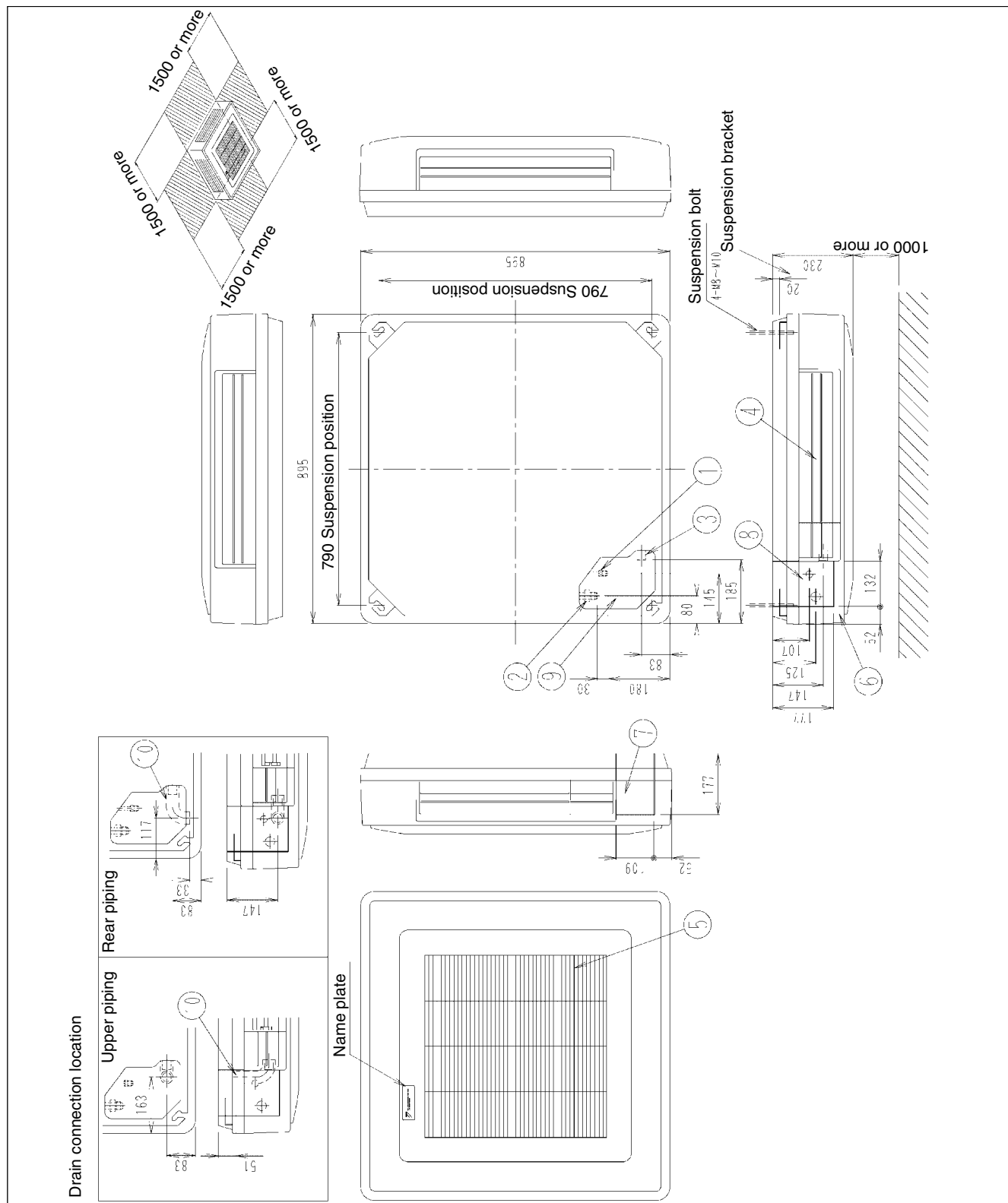
The table below contains the different components of the unit.

| No. | Component |
|-----|--|
| 1 | Liquid pipe connection |
| 2 | Gas pipe connection |
| 3 | Drain pipe connection |
| 4 | Air outlet |
| 5 | Air suction grille |
| 6 | Corner decoration panel |
| 7 | Right pipe / wiring connection |
| 8 | Rear pipe / wiring connection |
| 9 | Pipe through cover |
| 10 | Accessory drain elbow |
| — | Name plate: In case of an infrared remote control, this position is a signal receiver. |

2.14 FUYP100BV17 and FUYP125BV17

Outlook and dimensions

The illustration below shows the outlook, the dimensions and the installation and service space of the unit (mm).



Components

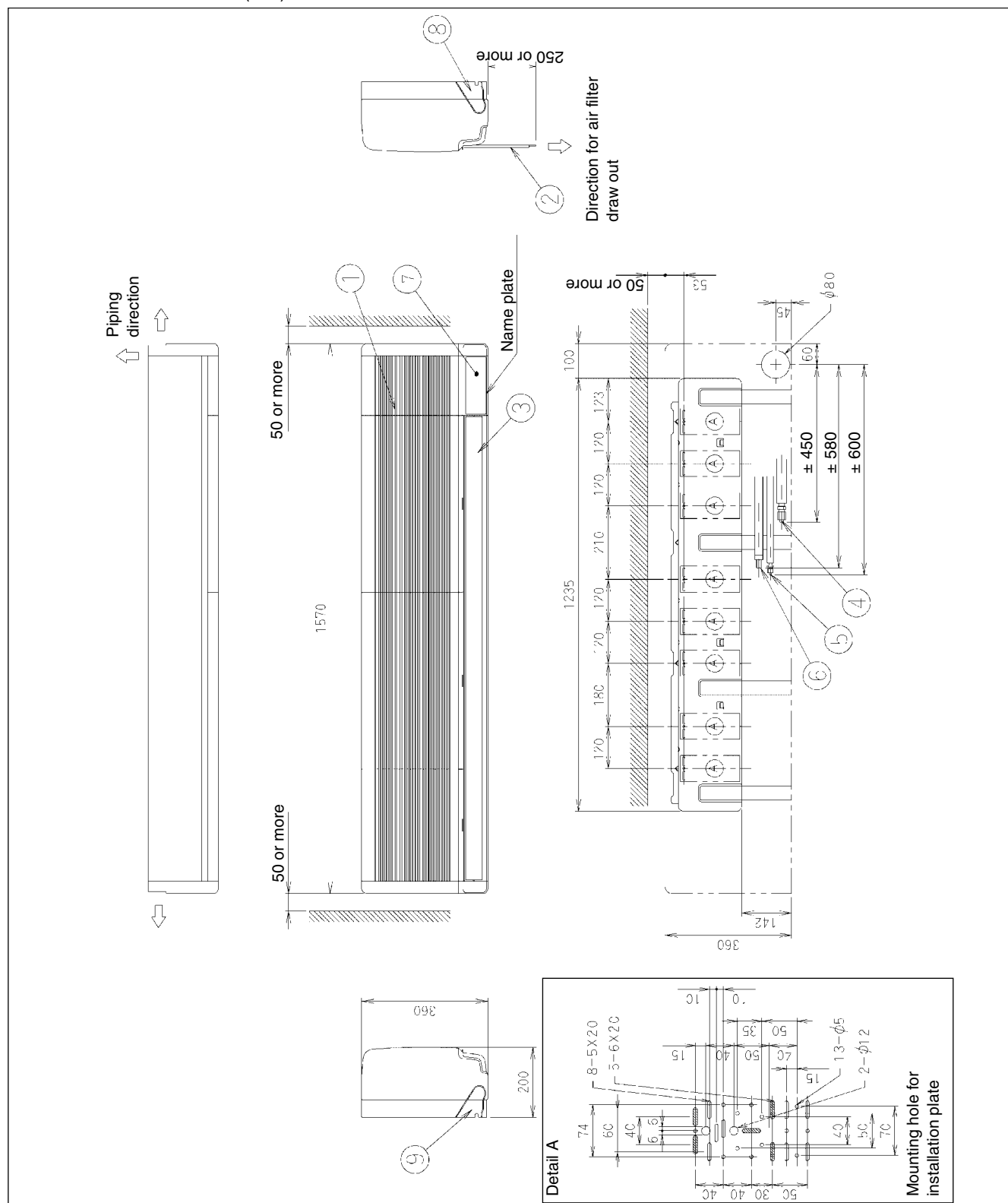
The table below contains the different components of the unit.

| No. | Component |
|-----|--|
| 1 | Liquid pipe connection |
| 2 | Gas pipe connection |
| 3 | Drain pipe connection |
| 4 | Air outlet |
| 5 | Air suction grille |
| 6 | Corner decoration panel |
| 7 | Right pipe / wiring connection |
| 8 | Rear pipe / wiring connection |
| 9 | Pipe through cover |
| 10 | Accessory drain elbow |
| — | Name plate: In case of an infrared remote control, this position is a signal receiver. |

2.15 FAYP71BV1 and FAYP100BV1

Outlook and dimensions

The illustration below shows the outlook, the dimensions and the installation and service space of the unit (mm).



Components

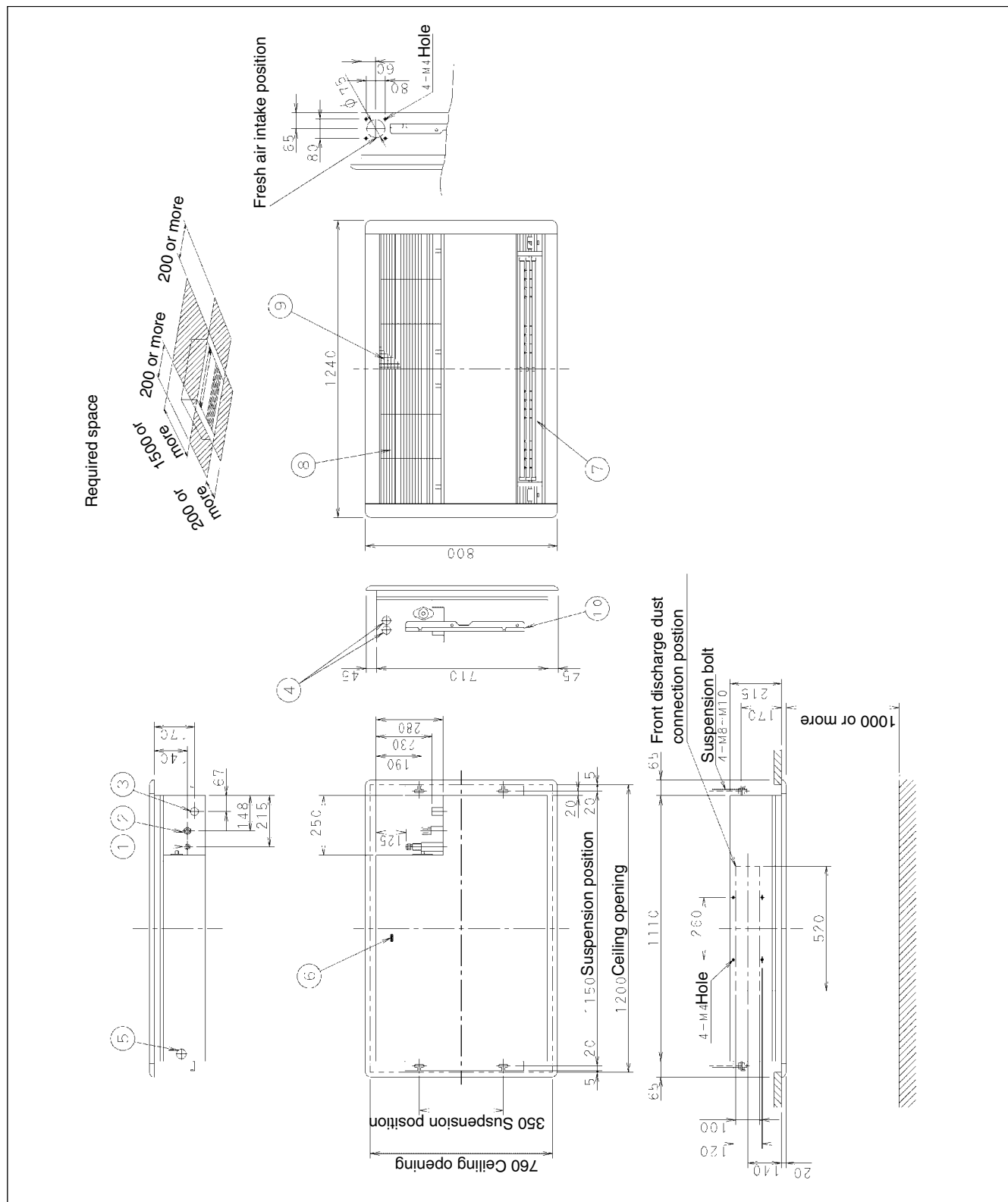
The table below contains the different components of the unit.

| No. | Component |
|-----|--|
| 1 | Front grille |
| 2 | Air filter |
| 3 | Discharge outlet |
| 4 | Gas pipe connection |
| 5 | Liquid pipe connection |
| 6 | Drain pipe connection (O.D. 26 mm) |
| 7 | Grounding terminal M4 (inside the cover) |
| 8 | Slit hole for right piping connection |
| 9 | Slit hole for left piping connection |
| — | Name plate: In case of an infrared remote control, this position is a signal receiver. |

2.16 FHYKP35BV1 and FHYKP45BV1

Outlook and dimensions

The illustration below shows the outlook, the dimensions and the installation and service space of the unit (mm).



Components

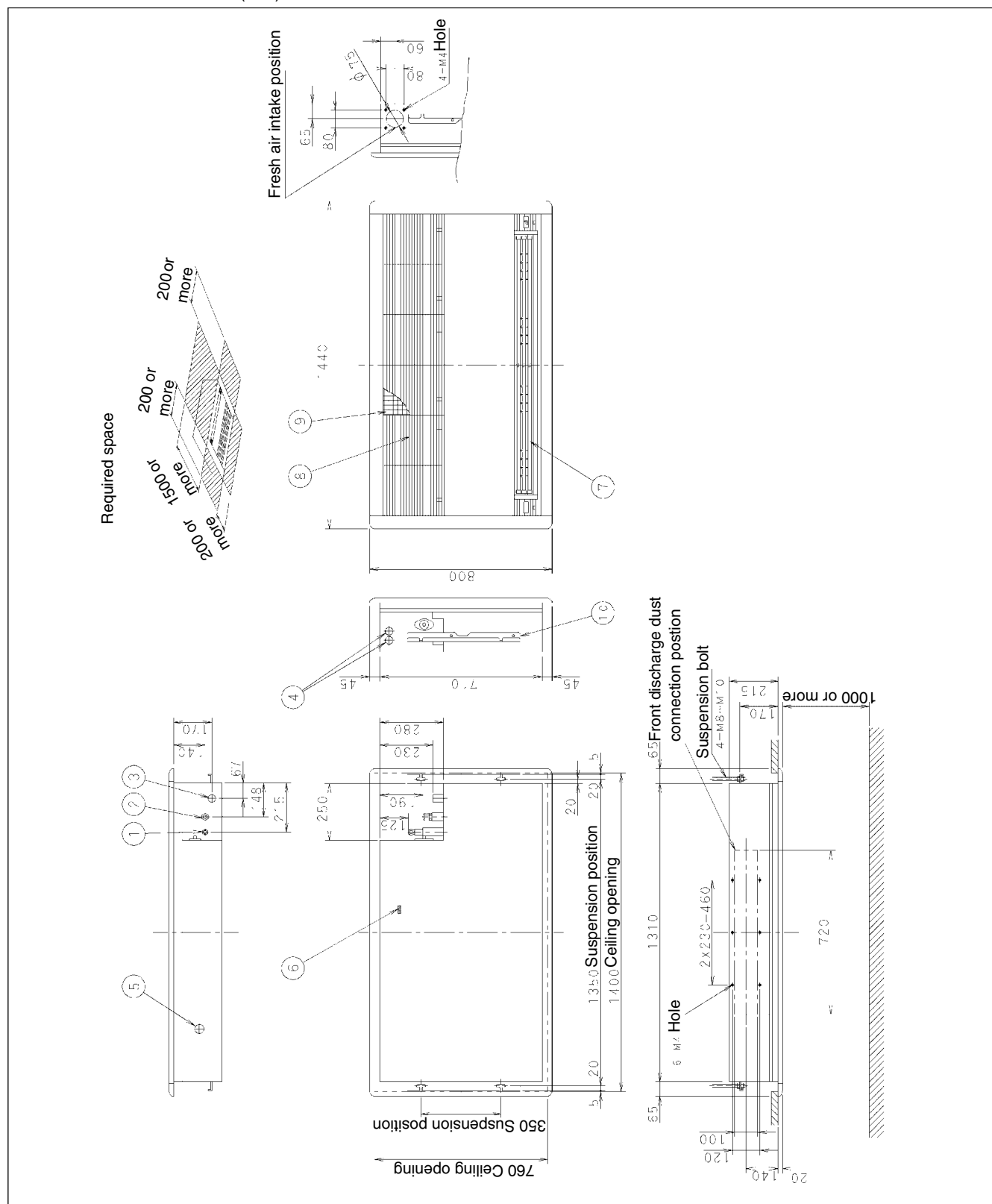
The table below contains the different components of the unit.

| No. | Component |
|-----|---|
| 1 | Liquid pipe connection |
| 2 | Gas pipe connection |
| 3 | Drain pipe connection |
| 4 | Wire intake |
| 5 | Wire intake for remote control |
| 6 | Grounding terminal M4 (inside the switch box) |
| 7 | Air discharge grille |
| 8 | Air suction grille |
| 9 | Air filter |
| 10 | Suspension bracket |

2.17 FHYKP60BV1 and FHYKP71BV1

Outlook and dimensions

The illustration below shows the outlook, the dimensions and the installation and service space of the unit (mm).



Components

The table below contains the different components of the unit.

| No. | Component |
|-----|---|
| 1 | Liquid pipe connection |
| 2 | Gas pipe connection |
| 3 | Drain pipe connection |
| 4 | Wire intake |
| 5 | Wire intake for remote control |
| 6 | Grounding terminal M4 (inside the switch box) |
| 7 | Air discharge grille |
| 8 | Air suction grille |
| 9 | Air filter |
| 10 | Suspension bracket |

1

3 Specifications

3.1 What Is in This Chapter?

Introduction

This chapter contains the following information:

- Technical specifications
- Electrical specifications.

Options

For possible options, refer to OH98-2 or the installation manual.

Outdoor units

This chapter contains the following specifications:

| Specifications | See page |
|--|----------|
| 3.2-R35, R45, R60, MA56 and MA90 | 1-58 |
| 3.3-RP71 | 1-59 |
| 3.4-RP100, RP125, RP200 and RP250 | 1-60 |
| 3.5-RY35 and RY45 | 1-61 |
| 3.6-RYP71, RYP100, RYP125, RYP200 and RYP250 | 1-62 |

Indoor units

This chapter contains the following specifications:

| Specifications | See page |
|---------------------|----------|
| 3.7-FHC | 1-63 |
| 3.8-FHYC and FHYCP | 1-64 |
| 3.9-FHYBP | 1-65 |
| 3.10-FDYP | 1-66 |
| 3.11-FHYP | 1-67 |
| 3.12-FUYP | 1-68 |
| 3.13-FAYP and FHYKP | 1-69 |

3.2 R35, R45, R60, MA56 and MA90

Technical specifications

The table below contains the technical specifications.

| Specification | | R35GZ7V11 | R45GZ7V11 | R45GZ7W11 | R60GZ7W11 | MA56GZ7W11 | MA90GZ7W11 |
|-------------------------------|---------------------------------|---------------------------------------|--------------------------|--------------------------|-----------------|---------------------------------------|-----------------|
| Compressor | Model x No. | 802 352 45 x 1 | 808 052 45 x 1 | 808 060 88 x 1 | 802 445 88 x 1 | 808 060 88 x 1 | 802 445 88 x 1 |
| | Type | Hermetically sealed rotary compressor | | | | Hermetically sealed rotary compressor | |
| | Refrigerant oil type | FV68S | | | | FV68S | |
| | Speed | 2880 rpm | 2875 rpm | 2790 rpm | 2800 rpm | 2790 rpm | — |
| | No. of cylinders | 1 | | | | — | — |
| | Oil charge | 520 cc | 750 cc | 1350 cc | | 750 cc | 1350 cc |
| Heat exchanger | Length | 733 mm | | | 788 mm | 788 mm | 784 mm |
| | Rows x stages x fin pitch | 2 x 20 x 2.0 mm | | | 2 x 24 x 2.0 mm | 2 x 24 x 2.0 mm | 2 x 32 x 2.0 mm |
| | No. of passes | 2 | | | | 2 | |
| | Face area | 0.372 m² | | | 0.481 m² | 0.481 m² | 0.319 m² |
| | Tube type | Hi-XA | | | | Hi-XA | |
| | Fin type | WL fin | | | | WL fin | |
| | Empty tubeplate hole | 0 | | | | 0 | |
| | No. of fans | 1 | | | | 1 | |
| Fan | Nominal air flow (230V) cooling | 27 m³/min | 30 m³/min | 43 m³/min | | 43 m³/min | 46 m³/min |
| | Fan motor model | UE6S-31A4P | F62P45J22 | AF-220-49-6-1 | | AF-220-49-6-1 | AF-230-66-6-1 |
| | Nominal speed (230 V) | H: 815 rpm L: 490 rpm | H: 890 rpm L: 470 rpm | H: 785 rpm L: 455 rpm | | H: 765 rpm | H: 775 rpm |
| | Fan speed | 2 steps | | | | 2 steps | 1 step |
| Refrigerant circuit | Type | R407C | | | | R407C | |
| | Charge | 1.3 kg | 1.5 kg | 1.85 kg | | 1.9 kg | 3.0 kg |
| | No. of circuits | 1 | | | | Max. 4 | Max. 5 |
| Safety and functional devices | | See page 1–71 | | | | See page 1–71 | |
| Heat insulation | | Both liquid and gas pipes | | | | Both liquid and gas pipes | |
| Weight | | 39 kg | 46 kg | 62 kg | | 62 kg | 87 kg |

Electrical specifications

The table below contains the electrical specifications.

| Specification | | R35GZ7V11 | R45GZ7V11 | R45GZ7W11 | R60GZ7W11 | MA56GZ7W11 | MA90GZ7W11 |
|---------------|-----------------------------------|--|------------|--|------------|--|------------|
| Unit | Phase | 1~ | | 3N~ | | 3N~ | |
| | Voltage | 230 V | | 400 V | | 400 V | |
| | Frequency | 50 Hz | | 50 Hz | | 50 Hz | |
| | No. of wire connections | 3 for power supply 4 for connections with indoor (including earth wire) | | 5 for power supply 4 for connections with indoor (including earth wire) | | 5 for power supply 4 for connections with indoor (including earth wire) | |
| | Nominal running current (cooling) | 6.4 A | 10.8 A | 3.98 A | 5.6/6.35 A | — | — |
| | Max. running current | — | — | — | 6.8/7.7 A | — | — |
| | Starting current | 33.5 A | 48 A | 19 A | 26 A | 19 A | 27 A |
| | Recommended fuses | 12 A | 16 A | 12 A | 16 A | 16 A | — |
| | Power supply intake | Outdoor unit only | | | | Outdoor unit only | |
| Compressor | Phase | — | — | — | — | — | 3N~ |
| | Voltage | — | — | — | — | — | 400 V |
| | No. x motor output | 1 x 1075 W | 1 x 1500 W | 1 x 1600 W | 1 x 2100 W | 1 x 1600 W | 1 x 2100 W |
| Fan motor | Phase | — | — | — | — | — | 1~ |
| | Voltage | — | — | — | — | — | 230 V |
| | Starting current | — | — | — | — | — | 1.01 |
| | Nominal running current | — | — | — | — | — | 0.68 A |
| | Power consumption | — | — | — | — | — | 152 W |
| | No. of motors x output | 1 x 30 W | 1 x 45 W | 1 x 49 W | | 1 x 49 W | 1 x 66 W |

3.3 RP71

Technical specifications

The table below contains the technical specifications.

| Specification | | RP71B7V1 | RP71B7W1 | RP71B7T1 |
|-------------------------------|---------------------------------|---------------------------------|---------------|---------------|
| Compressor | Model x No. | JT90FA-V1N x 1 | JT90FA-YE x 1 | JT90FA-T1 x 1 |
| | Type | Hermetically sealed scroll type | | |
| | Refrigerant oil type | DAPHNE FVC68D | | |
| | Oil charge | 1200 cc | | |
| Heat exchanger | Length | 860 mm | | |
| | Rows x stages x fin pitch | 2 x 38 x 2.0 mm | | |
| | No. of passes | 6 | | |
| | Face area | 0.719 m ² | | |
| | Tube type | Hi-XA | | |
| | Fin type | Non symm. waffle louver | | |
| | Empty tubeplate hole | 0 | | |
| Fan | No. of fans | 1 | | |
| | Nominal air flow (230V) cooling | 51 m ³ /min | | |
| | Fan motor model | P47L11S | | |
| Refrigerant circuit | Fan speed | 3 steps | | |
| | Type | R407C | | |
| Safety and functional devices | Charge | 3.1 kg | | |
| | | See page 1-71 and 3-15 | | |
| Heat insulation | | Both liquid and gas pipes | | |
| Weight | | 88 kg | 85 kg | |

Electrical specifications

The table below contains the electrical specifications.

| Specification | | RP71B7V1 | RP71B7W1 | RP71B7T1 |
|---------------|-------------------------|--|--|--|
| Unit | Phase | 1N~ | 3N~ | 3~ |
| | Voltage | 230 V | 400 V | 230 V |
| | Frequency | 50 Hz | | |
| | No. of wire connections | 3 wires for power supply (including earth wire) 4 wires for connection with indoor (including earth wire) | 5 wires for power supply (including earth wire) 4 wires for connection with indoor (including earth wire) | 4 wires for power supply (including earth wire) 4 wires for connection with indoor (including earth wire) |
| | Power supply intake | Outdoor unit only | | |
| Compressor | Phase | 1~ | 3~ | |
| | Voltage | 230 V | 400 V | 230 V |
| | Starting method | Direct | | |
| | No. x motor output | 1 x 2200 W | | |
| Fan motor | Phase | 1~ | | |
| | Voltage | 230 V | | |
| | No. of motors x output | 1 x 80 W | | |

3.4 RP100, RP125, RP200 and RP250

Technical specifications

The table below contains the technical specifications.

| Specification | | RP100B7V1 | RP100B7W1 | RP100B7T1 | RP125B7W1 | RP125B7T1 | RP200B7W1 | RP250B7W1 | |
|-------------------------------|---------------------------------|---------------------------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|
| Compressor | Model x No. | JT125FA-V1N x 1 | JT125FA-YE x 1 | JT125FA-T1 x 1 | JT160FA-YE x 1 | JT160FA-T1 x 1 | JT236DA-YE x 2 | JT300DA-YE x 2 | |
| | Type | Hermetically sealed scroll type | | | | | | | |
| | Crankcase heater | — | — | — | — | — | 50 W | 72 W | |
| | Refrigerant oil type | DAPHNE FVC68D | | | | | | | |
| | Speed | — | — | — | — | — | 2900 rpm | | |
| | Oil charge | 1500 cc | | | | | | 4000 cc | |
| Heat exchanger | Length | 860 mm | | | | | | 1790 mm | |
| | Rows x stages x fin pitch | 2 x 54 x 2.0 mm | | | | | | 2 x 40 x 2.0 mm | 2 x 50 x 2.0 mm |
| | No. of passes | 9 | | | | 13 | | 18 | 16 |
| | Face area | 1.022 m² | | | | | | 1.57 m² | 1.97 m² |
| | Tube type | Hi-XA | | | | | | | |
| | Fin type | Non symm. waffle louvre | | | | | | | |
| | Empty tubeplate hole | 8 | | | | 0 | | | |
| | No. of fans | 2 | | | | | | | |
| Fan | Nominal air flow (230V) cooling | 94 m³/min | | | | | | 170 m³/min | 175 m³/min |
| | Fan motor model | P47L11S x 2 | | | | | | P55J11F | P55J11F |
| | Fan speed | 3 steps | | | | | | 1 step | |
| Refrigerant circuit | Type | R407C | | | | | | | |
| | Charge | 3.6 kg | | | | 3.9 kg | | 7.5 kg | 9.2 kg |
| Safety and functional devices | | See page 1–71 and 3–15 | | | | | | | |
| Heat insulation | | Both liquid and gas pipes | | | | | | | |
| Weight | | 103 kg | 98 kg | | | 100 kg | | 194 kg | 206 kg |

Electrical specifications

The table below contains the electrical specifications.

| Specification | | RP100B7V1 | RP100B7W1 | RP100B7T1 | RP125B7W1 | RP125B7T1 | RP200B7W1 | RP250B7W1 |
|---------------|-----------------------------------|--|--|--|--|--|--|-------------|
| Unit | Phase | 1~ | 3N~ | 3~ | 3N~ | 3~ | 3N~ | |
| | Voltage | 230 V | 400 V | 230 V | 400 V | 230 V | 400 V | |
| | Frequency | 50 Hz | | | | | | |
| | No. of wire connections | 3 wires for power supply (including earth wire) 4 wires for connection with indoor (including earth wire) | 5 wires for power supply (including earth wire) 4 wires for connection with indoor (including earth wire) | 4 wires for power supply (including earth wire) 4 wires for connection with indoor (including earth wire) | 5 wires for power supply (including earth wire) 4 wires for connection with indoor (including earth wire) | 4 wires for power supply (including earth wire) 4 wires for connection with indoor (including earth wire) | 5 wires for power supply (including earth wire) 4 wires for connection with indoor (including earth wire) | |
| | Nominal running current (cooling) | — | — | — | — | — | 14.4 A | 17.2 A |
| | Max. running current | — | — | — | — | — | 17.9 A | 27.5 A |
| | Power supply intake | Outdoor unit only | | | | | — | — |
| Compressor | Phase | 1~ | 3~ | | | | — | — |
| | Voltage | 230 V | 400 V | 230 V | 400 V | 230 V | — | — |
| | No. x motor output | 1 x 3000 W | | | 1x 3750 W | | 2 x 5500 W | 2 x 7500 W |
| | Starting method | Direct | | | | | — | — |
| Fan motor | Phase | 1~ | | | | | — | — |
| | Voltage | 230 V | | | | | — | — |
| | No. of motors x output | 80 + 85 W | | | | | 230 + 190 W | 230 + 140 W |

3.5 RY35 and RY45

Technical specifications

The table below contains the technical specifications.

| Specification | | RY35EAZ7V1 | RY45EAZ7V1 |
|-------------------------------|----------------------------------|--------------------------------|------------------------|
| Compressor | Model x No. | 1YC43BTV1 | 1YC56ATV1N |
| | Type | Hermetically sealed swing type | |
| | Crankcase heater | — | — |
| | Refrigerant oil type | FVC68D + HAB15D | |
| | No. x motor output | 1 x 1300 W | 1 x 1700 W |
| | Speed | 2850 rpm | 2860 rpm |
| | No. of cylinders | 1 | |
| | Oil charge | 850 cc | |
| Heat exchanger | Length | 805 mm | 788 mm |
| | Rows x stages x fin pitch | 1 x 24 x 2.0 mm | 2 x 24 x 2.0 mm |
| | No. of passes | 1.67 | 3 |
| | Face area | 0.513 m ² | 0.481 m ² |
| | Tube type | Hi-XA | |
| | Fin type | WL fin | |
| | Empty tubeplate hole | 0 | |
| | No. of fans | 1 | |
| Fan | Nominal air flow (230 V) cooling | 36 m ³ /min | 31 m ³ /min |
| | Nominal air flow (230 V) heating | 32 m ³ /min | 28 m ³ /min |
| | Fan motor model | 19TFB6062 | |
| | Nominal speed (230 V) | H: 610 rpm L: 350 rpm | |
| | Fan speed | 2 steps | |
| Refrigerant circuit | Type | R407C | |
| | Charge | 1.1 kg | 2.0 kg |
| | No. of circuits | Max. 1 | |
| Safety and functional devices | | See page 1-71 | |
| Heat insulation | | Both liquid and gas pipes | |
| Weight | | 50 kg | 57 kg |

Electrical specifications

The table below contains the electrical specifications.

| Specification | | RY35EAZ7V1 | RY45EAZ7V1 |
|---------------|-----------------------------------|--|------------|
| Unit | Phase | 1~ | |
| | Voltage | 230 V | |
| | Frequency | 50 Hz | |
| | No. of wire connections | 3 for power supply (including earth wire) 4 for connecting with indoor (including earth wire) | |
| | Nominal running current (cooling) | 6.9 A | 9.1 A |
| | Nominal running current (heating) | 6.4 A | 8.8 A |
| | Starting current (cooling) | 34 A | 42 A |
| | Starting current (heating) | 34 A | 42A |
| | Recommended fuses | 16 A | 20 A |
| | Power supply intake | Outdoor unit only | |
| Fan motor | No. of motors x output | 1 x 30 W | |

3.6 RYP71, RYP100, RYP125, RYP200 and RYP250

Technical specifications

The table below contains the technical specifications.

| Specification | | RYP71B7V1 | RYP71B7W1 | RYP100B7V1 | RYP100B7W1 | RYP125B7W1 | RYP200B7W1 | RYP250B7W1 |
|-------------------------------|----------------------------------|---------------------------------|---------------|-----------------|---------------|----------------|-----------------|-----------------|
| Compressor | Model x No. | JT90FA-V1N x 1 | JT90FA-YE x 1 | JT125FA-V1N x 1 | JT125F-YE x 1 | JT160FA-YE x 1 | JT236DA-YE x 2 | JT300DA-YE x 2 |
| | Type | Hermetically sealed scroll type | | | | | | |
| | Crankcase heater | — | — | — | — | — | 50 W | 72 W |
| | Refrigerant oil type | DAPHNE FVC68D | | | | | | |
| | No. x motor output | 1 x 2200 W | | 1 x 3000 W | | 1 x 3750 W | 2 x 5500 W | 2 x 7500 W |
| | Speed | — | — | — | — | — | 2900 rpm | |
| | Oil charge | 1200 cc | | 1500 cc | | 4000 cc | | |
| Heat exchanger | Length | 860 mm | | | | | 1790 mm | |
| | Rows x stages x fin pitch | 2 x 38 x 2.0 mm | | 2 x 54 x 2.0 mm | | | 2 x 40 x 2.0 mm | 2 x 50 x 2.0 mm |
| | No. of passes | 6 | | 9 | | 13 | 18 | 16 |
| | Face area | 0.719 m² | | 1.022 m² | | | 1.57 m² | 1.97 m² |
| | Tube type | Hi-XA | | | | | | |
| | Fin type | Non symm. waffle louvre | | | | | | |
| | Empty tubeplate hole | 0 | | 8 | | 0 | | |
| | No. of fans | 1 | | 2 | | | | |
| Fan | Nominal air flow (230 V) cooling | 51 m³/min | | 94 m³/min | | | 170 m³/min | 175 m³/min |
| | Nominal air flow (230 V) heating | 46 m³/min | | 82 m³/min | 85 m³/min | | — | — |
| | Fan motor model | P47L11S | | P47L11 x 2 | | | P55J11F | |
| | Fan speed | 3 steps | | | | | 1 step | |
| Refrigerant circuit | Type | R407C | | | | | | |
| | Charge | 3.1 kg | | 3.6 kg | | 3.9 kg | 7.5 kg | 9.2 kg |
| Safety and functional devices | | See page 1–71 and 3–15 | | | | | | |
| Heat insulation | | Both liquid and gas pipes | | | | | | |
| Weight | | 89 kg | 86 kg | 104 kg | 99 kg | 102 kg | 196 kg | 210 kg |

Electrical specifications

The table below contains the electrical specifications.

| Specification | | RYP71B7V1 | RYP71B7W1 | RYP100B7V1 | RYP100B7W1 | RYP125B7W1 | RYP200B7W1 | RYP250B7W1 |
|---------------|-----------------------------------|--|--|--|--|------------|-------------|------------|
| Unit | Phase | 1~ | 3N~ | 1~ | 3N~ | | | |
| | Voltage | 230 V | 400 V | 230 V | 400 V | | | |
| | Frequency | 50 Hz | | | | | | |
| | No. of wire connections | 3 for power supply (including earth wire) 4 for connecting with indoor (including earth wire) | 5 for power supply (including earth wire) 4 for connecting with indoor (including earth wire) | 3 for power supply (including earth wire) 4 for connecting with indoor (including earth wire) | 5 for power supply (including earth wire) 4 for connecting with indoor (including earth wire) | | | |
| | Nominal running current (cooling) | — | — | — | — | — | 14.4 A | 17.2 A |
| | Nominal running current (heating) | — | — | — | — | — | — | — |
| | Max. running current | — | — | — | — | — | 17.9 A | 27.5 A |
| | Power supply intake | Outdoor unit only | | | | — | — | — |
| Compressor | Phase | 1~ | 3~ | 1~ | 3~ | — | | — |
| | Voltage | 230 V | 400 V | 230 V | 400 V | — | | — |
| | Starting method | Direct | | | | | | |
| Fan motor | Phase | 1~ | | | 1~ | | — | — |
| | Voltage | 230 V | | | 230 V | | — | — |
| | No. of motors x output | 1 x 80 W | | 80 + 85 W | | | 230 + 190 W | |

3.7 FHC

Technical specifications

The table below contains the technical specifications.

| Specification | | FHC35BZ7V1 | FHC45BZ7V1 | FHC60BZ7V1 |
|-------------------------------|----------------------------|--|--|--|
| Heat exchanger | Rows x stages x fin pitch | 2 x 8 x 1.5 mm | | |
| | Face area | 0.331 m ² | | |
| | Tube type | Hi-XA | | |
| | Fin type | Cross fin coil | | |
| Fan | Nominal air flow (cooling) | H: 14 m ³ /min L: 10 m ³ /min | H: 15 m ³ /min L: 11 m ³ /min | H: 18 m ³ /min L: 14 m ³ /min |
| | Fan motor model | QTS56B14M | | |
| | Fan speed | 2 steps | | |
| | Fan type | Turbo fan | | |
| | Drive | Direct drive | | |
| Refrigerant circuit | Type | R407C | | |
| Safety and functional devices | | See page 1-91 and 3-14 | | |
| Air filter | | Resin net (mold resistant) | | |
| Temperature control | | Computerized control | | |
| Insulation | Heat | Foamed polystyrene | | |
| | Sound absorbing | | | |
| Weight | | Unit: 23 kg Decoration panel: 5 kg | | |

Electrical specifications

The table below contains the electrical specifications.

| Specification | | FHC35BZ7V1 | FHC45BZ7V1 | FHC60BZ7V1 |
|---------------|------------------------|------------|------------|------------|
| Unit | Phase | 1~ | | |
| | Voltage | 230 V | | |
| | Frequency | 50 Hz | | |
| Fan motor | No. of motors x output | 1 x 45 W | | |
| | Power consumption | 140 W | | 161 W |
| | FLA (Full Load Amps) | 0.6 A | | |

3.8 FHYC and FHYCP

Technical specifications

The table below contains the technical specifications.

| Specification | | FHYCP35B7V1 FHYC35BZ7V1 | FHYCP45B7V1 FHYC45BZ7V1 | FHYCP60B7V1 | FHYCP71B7V1 | FHYCP100B7V1 | FHYCP125B7V1 |
|-------------------------------|----------------------------|---------------------------------------|------------------------------|------------------------------|-------------|---------------------------------------|------------------------------|
| Heat exchanger | Rows x stages x fin pitch | 2 x 8 x 1.5 mm | | | | 2 x 12 x 1.5 mm | |
| | Face area | 0.331 m ² | | | | 0.497 m ² | |
| | Tube type | Hi-XA | | | | | |
| | Fin type | Cross fin coil | | | | | |
| Fan | Nominal air flow (cooling) | H: 14 m³/min L: 10 m³/min | H: 15 m³/min L: 11 m³/min | H: 18 m³/min L: 14 m³/min | | H: 28 m³/min L: 21 m³/min | H: 31 m³/min L: 24 m³/min |
| | Nominal air flow (heating) | H: 14 m³/min L: 10 m³/min | H: 15 m³/min L: 11 m³/min | H: 18 m³/min L: 14 m³/min | | H: 28 m³/min L: 21 m³/min | H: 31 m³/min L: 24 m³/min |
| | Fan motor model | QTS46B14M | | | | QTS46A17M | |
| | Fan speed | 2 steps | | | | | |
| | Fan type | Turbo fan | | | | | |
| | Drive | Direct drive | | | | | |
| Refrigerant circuit | Type | R407C | | | | | |
| Safety and functional devices | | See page 1–91 and 3–14 | | | | | |
| Air filter | Filter class | Resin net (mold resistant) | | | | | |
| | Max. temperature | | | | | | |
| | Cleaning | | | | | | |
| Temperature control | | Computerized control | | | | | |
| Insulation | Heat | Foamed polystyrene | | | | | |
| | Sound absorbing | | | | | | |
| Weight | | Unit: 23 kg Decoration panel: 5 kg | | | | Unit: 27 kg Decoration panel: 5 kg | |

Electrical specifications

The table below contains the electrical specifications.

| Specification | | FHYCP35B7V1 FHYC35BZ7V1 | FHYCP45B7V1 FHYC45BZ7V1 | FHYCP60B7V1 | FHYCP71B7V1 | FHYCP100B7V1 | FHYCP125B7V1 |
|---------------|------------------------|----------------------------|----------------------------|-------------|-------------|--------------|--------------|
| Unit | Phase | 1~ | | | | | |
| | Voltage | 230 V | | | | | |
| | Frequency | 50 Hz | | | | | |
| Fan motor | FLA (Full Load Amps) | 0.6 A | | | | 1.0 A | |
| | Power consumption | 140 W | | 161 W | | 204 W | 238 W |
| | No. of motors x output | 1 x 45 W | | | | 1 x 90 W | |

3.9 FHYBP

Technical specifications

The table below contains the technical specifications.

| Specification | | FHYBP35B7V1 | FHYBP45B7V1 | FHYBP60B7V1 | FHYBP71B7V1 | FHYBP100B7V1 | FHYBP125B7V1 |
|-------------------------------|-------------------------------------|---|-------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| Heat exchanger | Length | 450 mm | | 750 mm | | 1150 mm | |
| | Rows x stages x fin pitch | 3 x 14 x 1.75 mm | | | | | |
| | No. of passes | 4 | 6 | 7 | | 10 | 13 |
| | Face area | 0.132 m² | | 0.221 m² | | 0.338 m² | |
| | Tube type | Hi-XA | | | | | |
| | Fin type | Fin Rhombus type | | | | | |
| | Empty tube hole | 4 | 0 | | | 14 | 0 |
| | No. of fans | 1 | | 2 | | 3 | |
| Fan | Nominal air flow (cooling) | H: 11.5 m³/min L: 9 m³/min | H: 14 m³/min L: 10 m³/min | H: 19 m³/min L: 14 m³/min | | H: 27 m³/min L: 20 m³/min | H: 35 m³/min L: 24 m³/min |
| | | Nominal air flow (heating) | H: 11.5 m³/min L: 9 m³/min | H: 14 m³/min L: 10 m³/min | H: 19 m³/min L: 14 m³/min | | H: 27 m³/min L: 20 m³/min |
| | Fan speed | | 2 steps | | | | |
| | Fan type | Sirocco fan | | | | | |
| | Drive | Direct drive | | | | | |
| | Static external pressure (50/60 Hz) | — | — | H: 88 M: 49 L: 20 | | H: 88 M: 49 | |
| Refrigerant circuit | Type | R407C | | | | | |
| Safety and functional devices | | See page 1–91 and 3–14 | | | | | |
| Insulation | Heat | Both liquid and gas pipes | | | | | |
| | Sound absorbing | Flame and heat resistant foamed polyethylene, regular foamed polyethylene and foamed PU | | Foamed polyurethane | | | |
| Weight | | 30 kg | 31 kg | 41 kg | | 51 kg | 52 kg |

Electrical specifications

The table below contains the electrical specifications.

| Specification | | FHYBP35B7V1 | FHYBP45B7V1 | FHYBP60B7V1 | FHYBP71B7V1 | FHYBP100B7V1 | FHYBP125B7V1 |
|---------------|-------------------------|-------------|-------------|-------------|-------------|--------------|--------------|
| Unit | Phase | 1~ | | | | | |
| | Voltage | 230 V | | | | | |
| | Frequency | 50 Hz | | | | | |
| | Recommended fuses | 16 A | 20 A | — | — | — | — |
| Fan motor | Phase | 1~ | | | | | |
| | Voltage | 230 V | | | | | |
| | Nominal running current | 0.5 A | 0.7 A | 0.9 A | | 1.0 A | 1.4 A |
| | No. of motors x output | 1 x 65 W | 1 x 85 W | 1 x 125 W | | 1 x 135 W | 1 x 225 W |
| | Power consumption | 65 W | 85 W | 125 W | | 135 W | 225 W |

3.10 FDYP

Technical specifications

The table below contains the technical specifications.

| Specification | | FDYP125B7V1 | FDYP200B7V1 | FDYP250B7V1 |
|-------------------------------|-------------------------------------|--------------------------------------|---------------|-------------|
| Heat exchanger | Rows x stages x fin pitch | 3 x 14 x 1.75 mm | 3 x 24 x 3 mm | |
| | Face area | 0.338 m² | 0.634 m² | |
| | Tube type | Hi-XA | | |
| | Fin type | MLH7 fin hydrophilia | Non symm. fin | |
| Fan | Nominal air flow (cooling) | 43 m³/min | 69 m³/min | 89 m³/min |
| | Fan motor model | DPA216-178NB | DPC241-241NB | |
| | Fan speed | 3 steps | | 2 steps |
| | Drive | Direct drive | | |
| | Static external pressure (50/60 Hz) | 0-150 Pa | 0-250 Pa | |
| Refrigerant circuit | Type | R407C | | |
| Safety and functional devices | | See page 1–91 and 3–14 | | |
| Air filter | Filter class | Eurovent 4/5 (EU2), EN 779 5G2) | | |
| | Max. temperature | 100°C | | |
| | Cleaning | Hot water 30-40°C or compressed air | | |
| Temperature control | | Computerized control | | |
| Insulation | Sound absorbing | Flame and heat resistant foamed felt | | |
| Weight | | 59 kg | 90 kg | 92 kg |

Electrical specifications

The table below contains the electrical specifications.

| Specification | | FDYP125B7V1 | FDYP200B7V1 | FDYP250B7V1 |
|---------------|------------------------|-------------|-------------|-------------|
| Unit | Phase | 1~ | | |
| | Voltage | 230 V | | |
| | Frequency | 50 Hz | | |
| Fan motor | No. of motors x output | 500 W | 650 W | 1000 W |

3.11 FHYP

Technical specifications

The table below contains the technical specifications.

| Specification | | FHP35BV1 | | FHP45BV1 | FHP60BV1 | FHP71BV1 | FHP100BV1 | FHP125BV1 |
|-------------------------------|----------------------------|--|------------------|----------|------------------------------|------------------------------|------------------------------|------------------------------|
| Heat exchanger | Length | 722 mm | | | 922 mm | | 1162 mm | 1352 mm |
| | Rows x stages x fin pitch | 2 x 12 x 1.75 mm | 3 x 12 x 1.75 mm | | | | | |
| | No. of passes | 6 | | | | | 11 | |
| | Face area | 0.182 m² | | | 0.233 m² | | 0.293 m² | 0.341 m² |
| | Tube type | N-hiX tubes | | | | | | |
| | Fin type | Cross fin coil (multi louvre fins) | | | | | | |
| | Empty tube hole | 0 | | | | | | |
| Fan | Nominal air flow (cooling) | H: 13 m³/min L: 10 m³/min | | | H: 16m³/min L: 13 m³/min | H: 17 m³/min L: 14 m³/min | H: 24 m³/min L: 20 m³/min | H: 30 m³/min L: 25 m³/min |
| | Nominal air flow (heating) | H: 13 m³/min L: 10 m³/min | | | H: 16 m³/min L: 13 m³/min | H: 17 m³/min L: 14 m³/min | H: 24 m³/min L: 20 m³/min | H: 30 m³/min L: 25 m³/min |
| | Fan motor model | 3D12K1AA1 | | | 4D12K1AA1 | | 3D12K2AA1 | 4D12K2AA1 |
| | Fan speed | 2 steps | | | | | | |
| | Fan type | Sirroco fan | | | | | | |
| Refrigerant circuit | Type | R407C | | | | | | |
| Safety and functional devices | | See page 1–91 and 3–14 | | | | | | |
| Insulation | Heat | Foamed polystyrene / foamed polyethylene | | | | | | |
| | Sound absorbing | Foamed polyurethane / glass wool | | | | | | |
| Weight | | 23 kg | 24 kg | 26 kg | 27 kg | 32 kg | 35 kg | |

Electrical specifications

The table below contains the electrical specifications.

| Specification | | FHYP35BV1 | FHYP45BV1 | FHYP60BV1 | FHYP71BV1 | FHYP100BV1 | FHYP125BV1 |
|---------------|------------------------|-----------|-----------|-----------|-----------|------------|------------|
| Unit | Phase | 1~ | | | | | |
| | Voltage | 230 V | | | | | |
| | Frequency | 50 Hz | | | | | |
| Fan motor | Phase | 1~ | | | | | |
| | Voltage | 230 V | | | | | |
| | Power consumption | 111 W | | 115 W | 117 W | 135 W | 144 W |
| | FLA (Full Load Amps) | 0.6 A | | | | 0.7 A | |
| | No. of motors x output | 3 x 62 W | | 4 x 62 W | | 3 x 130 W | 4 x 130 W |

3.12 FUYP

Technical specifications

The table below contains the technical specifications.

| Specification | | FUYP71BV17 | FUYP100BV17 | FUYP125BV17 |
|-------------------------------|----------------------------|---|------------------------------|------------------------------|
| Heat exchanger | Length | 2101 mm | | |
| | Rows x stages x fin pitch | 3 x 6 x 1.8 mm | 3 x 8 x 1.8 mm | |
| | No. of passes | 8 | | 12 |
| | Face area | 0.265 m ² | 0.353 m ² | |
| | Tube type | N-hiX tubes | | |
| | Fin type | Cross fin coil (multi louvre fins) | | |
| | Empty tube hole | 0 | 4 | 0 |
| Fan | Nominal air flow (cooling) | H: 19 m³/min L: 14 m³/min | H: 29 m³/min L: 21 m³/min | H: 32 m³/min L: 23 m³/min |
| | Nominal air flow (heating) | H: 19 m³/min L: 14 m³/min | H: 29 m³/min L: 21 m³/min | H: 32 m³/min L: 23 m³/min |
| | Fan motor model | QTS48A10M | QTS50B15M | |
| | Fan speed | 2 steps | | |
| | Fan type | Turbo fan | | |
| Refrigerant circuit | Type | R407C | | |
| Safety and functional devices | | See page 1–91 and 3–14 | | |
| Air filter | | Resin net (with mold resistant) | | |
| Insulation | Heat | Heat resistant foamed polyethylene Regular foamed polyethylene | | |
| Weight | | 25 kg | 31 kg | |

Electrical specifications

The table below contains the electrical specifications.

| Specification | | FUYP71BV17 | FUYP100BV17 | FUYP125BV17 |
|---------------|------------------------|----------------------------------|----------------------------------|-------------|
| Unit | Phase | 1~ | | |
| | Voltage | 230 V | | |
| | Frequency | 50 Hz | | |
| Fan motor | Phase | 1~ | | |
| | Voltage | 230 V | | |
| | Power consumption | Cooling: 180 W Heating: 160 W | Cooling: 289 W Heating: 269 W | |
| | FLA (Full Load Amps) | 0.6 A | 1.0 A | |
| | No. of motors x output | 1 x 45 W | 1 x 90 W | |

3.13 FAYP and FHYKP

Technical specifications

The table below contains the technical specifications.

| Specification | | FAYP71BV1 | FAYP100BV1 | FHYKP35BV1 | FHYKP45BV1 | FHYKP60BV1 | FHYKP71BV1 |
|-------------------------------|----------------------------|--|------------------------------|--|------------------------------|------------------------------|------------|
| Heat exchanger | Length | 1320 mm | | 778 mm | | 978 mm | |
| | Rows x stages x fin pitch | 2 x 12 x 1.4 mm | | 2 x 11 x 1.75 mm | 3 x 11 x 1.75 mm | | |
| | No. of passes | 9 | | 5 | | 9 | |
| | Face area | 0.332 m² | | 0.186 m² | | 0.226 m² | |
| | Tube type | N-hiX tubes | | N-hiX tubes | | | |
| | Fin type | Cross fin coil (multi louvre fins) | | Cross fin coil (multi louvre fins) | | | |
| | Empty tube hole | 2 | | 2 | 3 | | |
| Fan | Nominal air flow (cooling) | H: 19 m³/min L: 16 m³/min | H: 23 m³/min L: 19 m³/min | H: 12 m³/min L: 9 m³/min | H: 12 m³/min L: 10 m³/min | H: 17 m³/min L: 14 m³/min | |
| | Nominal air flow (heating) | H: 19 m³/min L: 16 m³/min | H: 23 m³/min L: 19 m³/min | H: 12 m³/min L: 9 m³/min | H: 12 m³/min L: 10 m³/min | H: 17 m³/min L: 14 m³/min | |
| | Fan motor model | QCL1163MA and QCL1163MB | | 3D12H1AH1V1 | 3D12H1J1V1 | 4D12H1AG1V1 | |
| | Fan speed | 2 steps | | 2 steps | | | |
| | Fan type | Cross flow fan | | Sirocco fan | | | |
| Refrigerant circuit | Type | R407C | | R407C | | | |
| Safety and functional devices | | See page 1–91 and 3–14 | | See page 1–91 and 3–14 | | | |
| Insulation | Heat | Foamed polystyrene / foamed polyethylene | | Foamed polystyrene / foamed polyethylene | | | |
| Weight | | 26 kg | | 30 kg | 31 kg | 33 kg | |
| Decoration panel (option) | Model | — | — | BYK45FJW1 | | BYK71FJW1 | |
| | Air filter | — | — | Resin net (with mold resistant) | | | |
| | Weight | — | — | 8.5 kg | | 9.5 kg | |

Electrical specifications

The table below contains the electrical specifications.

| Specification | | FAYP71BV1 | FAYP100BV1 | FHYKP35BV1 | FHYKP45BV1 | FHYKP60BV1 | FHYKP71BV1 |
|---------------|------------------------|-----------|------------|--------------------------------|---------------------------------|---------------------------------|------------|
| Unit | Phase | 1~ | | 1~ | | | |
| | Voltage | 230 V | | 230 V | | | |
| | Frequency | 50 Hz | | 50 Hz | | | |
| Fan motor | Phase | 1~ | | 1~ | | | |
| | Voltage | 230 V | | 230 V | | | |
| | Power consumption | 86 W | 101 W | Cooling: 92 W Heating: 59 W | Cooling: 100 W Heating: 67 W | Cooling: 123 W Heating: 90 W | |
| | FLA (Full Load Amps) | 0.3 A | 0.4 A | 0.2 A | 0.3 A | 0.5 A | |
| | No. of motors x output | 1 x 46 W | 1 x 49 W | 1 x 20 W | 1 x 25 W | 1 x 45 W | |

1

4 Functional Diagrams

4.1 What Is in This Chapter?

Introduction

This chapter contains the following information:

- Functional diagrams
- Pipe connection diameters.

Functional diagrams

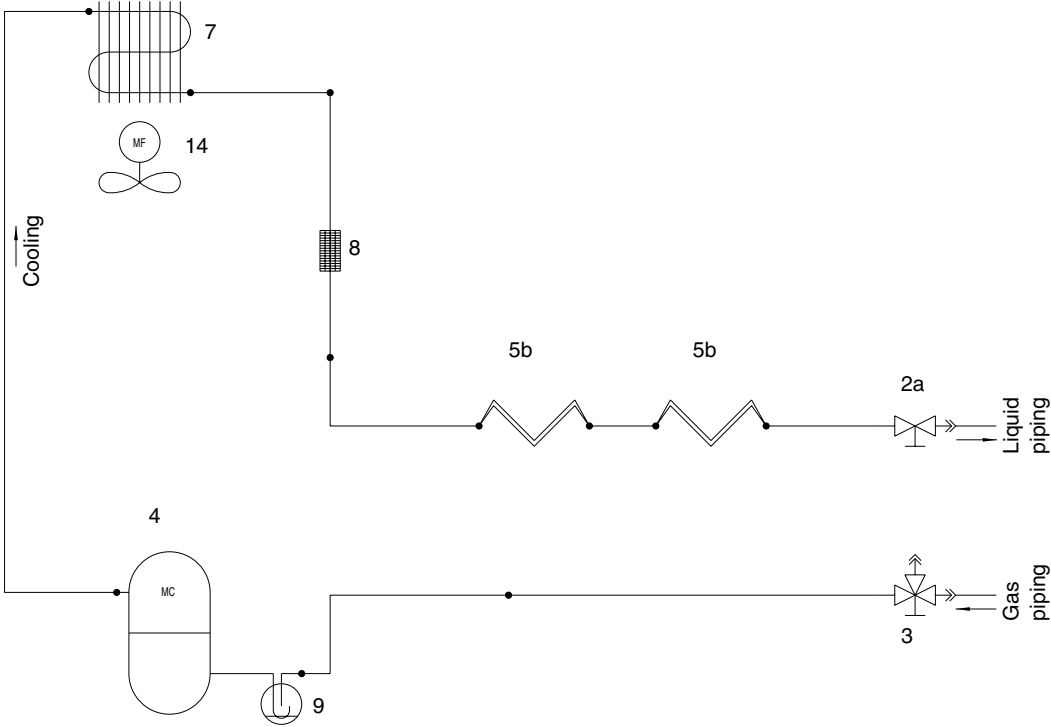
This chapter contains the following functional diagrams:

| Functional diagram | See page |
|--|----------|
| 4.2–R35GZ7V11 | 1–72 |
| 4.3–R45GZ7V11 and R45GZ7W11 | 1–73 |
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| 4.19–RYP200B7W1 and RYP250B7W1: Triple | 1–89 |
| 4.20–RYP200B7W1 and RYP250B7W1: Double Twin | 1–90 |
| 4.21–FHC, FHYBP, FHYC, FHYCP, FUYP, FAYP, FDYP, FHYP and FHYKP | 1–91 |
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4.2 R35GZ7V11

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1-93.

Pipe connection diameters

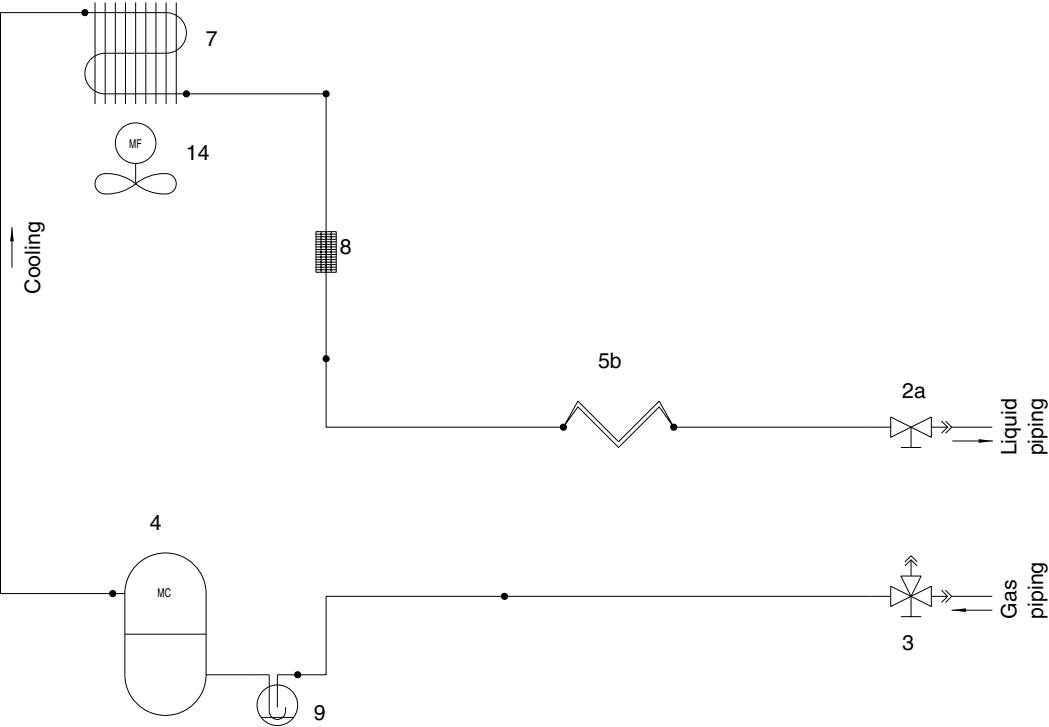
The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe (flare) | Ø Liquid pipe (flare) |
|-----------|--------------------|-----------------------|
| R35GZ7V11 | 12.70 mm | 6.35 mm |

4.3 R45GZ7V11 and R45GZ7W11

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1-93.

Pipe connection diameters

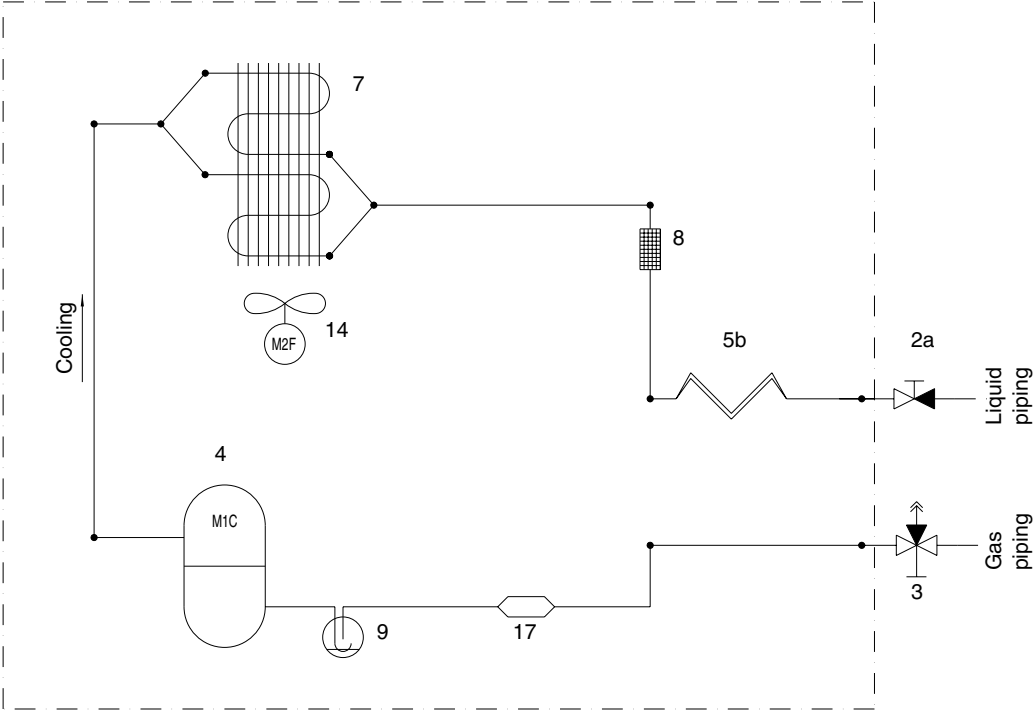
The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe (flare) | Ø Liquid pipe (flare) |
|-----------|--------------------|-----------------------|
| R45GZ7V11 | 15.87 mm | 6.35 mm |
| R45GZ7W11 | | |

4.4 R60GZ7W1

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1–93.

Pipe connection diameters

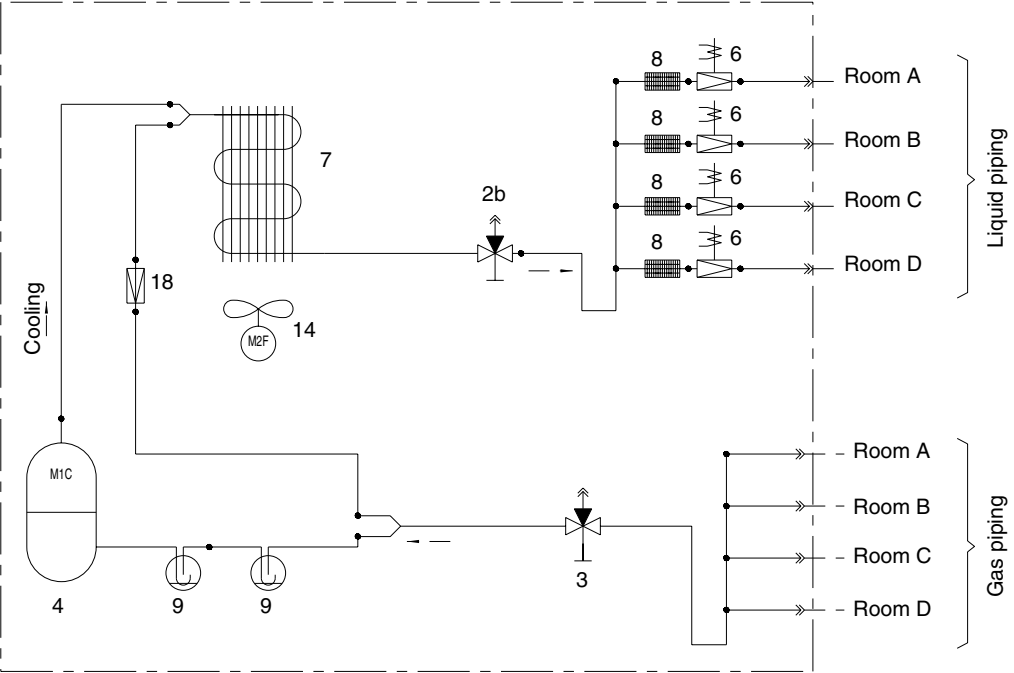
The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe (flare) | Ø Liquid pipe (flare) |
|----------|--------------------|-----------------------|
| R60GZ7W1 | 15.87 mm | 6.35 mm |

4.5 MA56GZ7W11

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1-93.

Pipe connection diameters

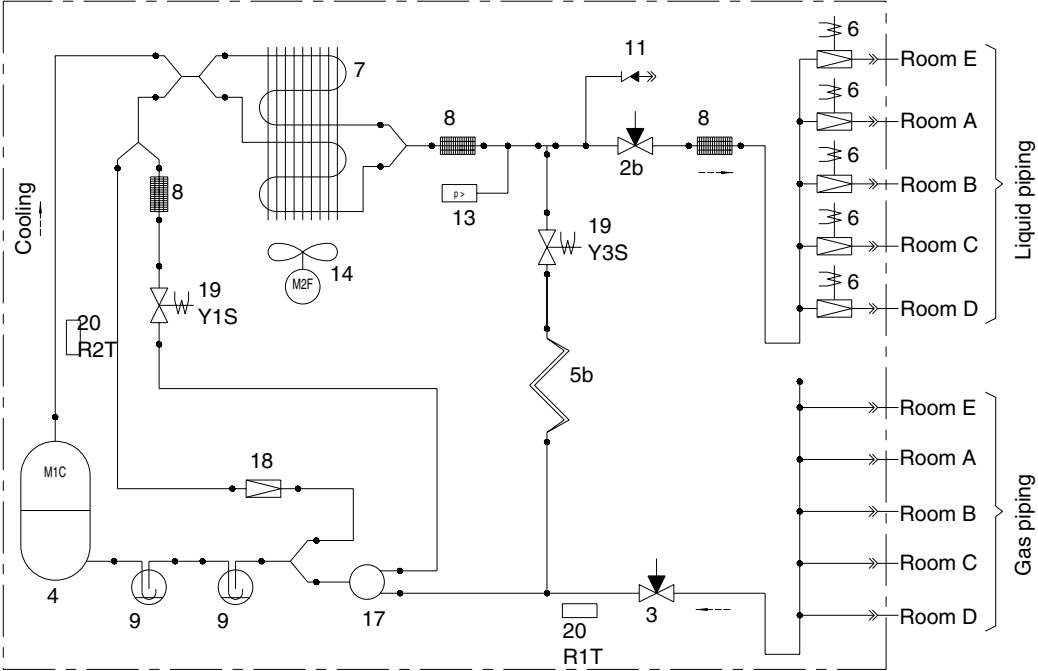
The table below contains the refrigerant pipe connection diameters.

| Model | Room | Ø Gas pipe (flare) | Ø Liquid pipe (flare) |
|------------|------|--------------------|-----------------------|
| MA56GZ7W11 | A | 12.70 mm | 6.35 mm |
| | B | 9.52 mm | |
| | C | 15.87 mm | |
| | D | | |

4.6 MA90GZ7W11

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1-93.

Pipe connection diameters

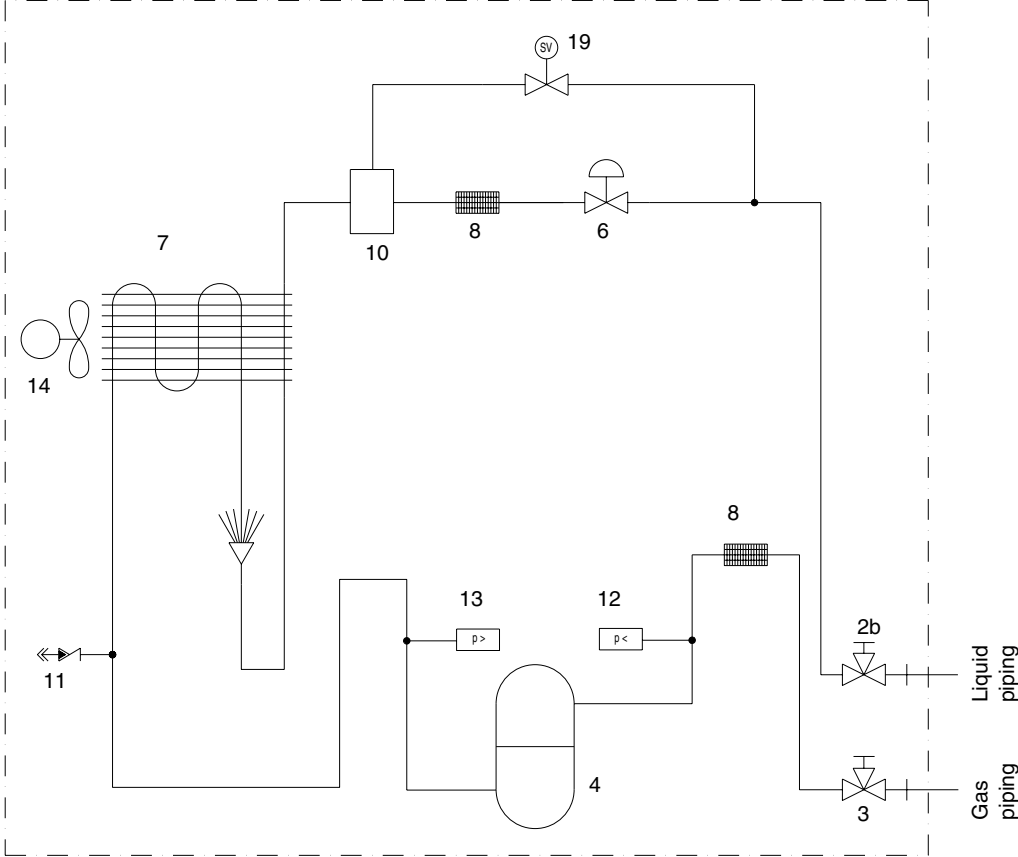
The table below contains the refrigerant pipe connection diameters.

| Model | Room | Ø Gas pipe (flare) | Ø Liquid pipe (flare) |
|------------|------|--------------------|-----------------------|
| MA90GZ7W11 | A | 12.70 mm | 6.35 mm |
| | B | | |
| | C | 15.87 mm | |
| | D | | |
| | E | | |

4.7 RP71B7V1, RP71B7W1, RP71B7T1, RP100B7V1, RP100B7W1, RP100B7T1, RP125B7W1 and RP125B7T1

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1-93.

Pipe connection diameters

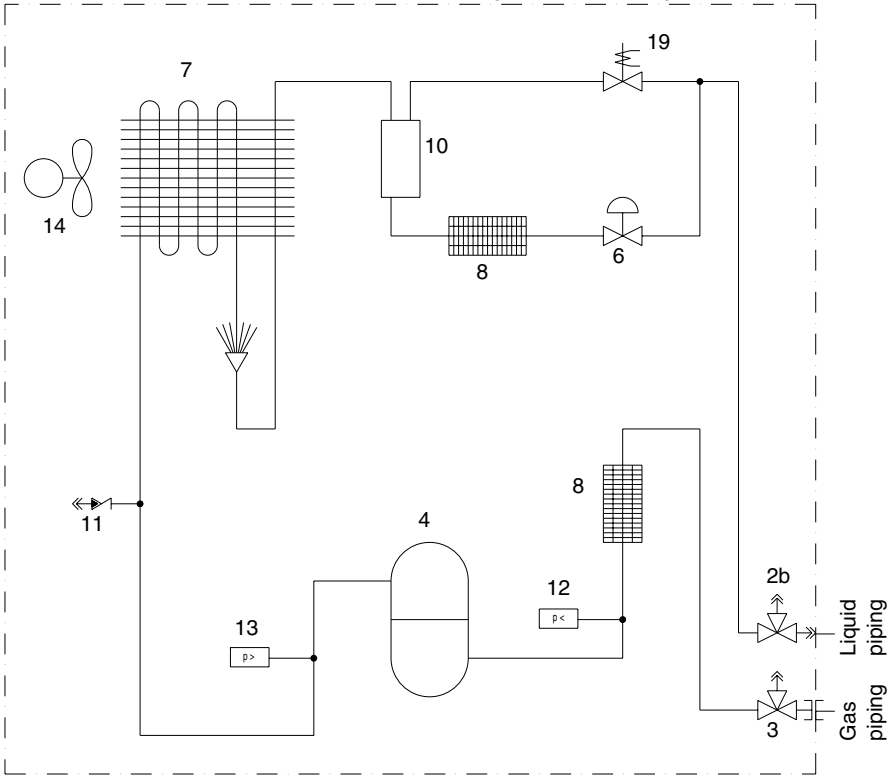
The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe (flare) | Ø Liquid pipe (flare) |
|-----------|--------------------|-----------------------|
| RP71B7V1 | 15.87 mm | 9.52 mm |
| RP71B7W1 | | |
| RP71B7T1 | | |
| RP100B7V1 | 19.05 mm | |
| RP100B7W1 | | |
| RP100B7T1 | | |
| RP125B7W1 | | |
| RP125B7T1 | | |

4.8 RP200B7W1 and RP250B7W1: Outdoor Unit

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1-93.

Pipe connection diameters

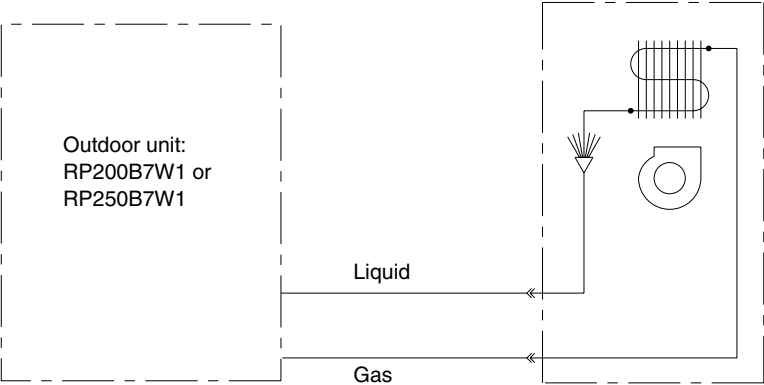
The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe (flange) | Ø Liquid pipe (flare) |
|-----------|--|-----------------------|
| RP200B7W1 | <ul style="list-style-type: none">■ For pair, see page 1-79.■ For twin, see page 1-80.■ For triple, see page 1-81.■ For double twin, see page 1-82. | |
| RP250B7W1 | | |
| | | |
| | | |

4.9 RP200B7W1 and RP250B7W1: Pair

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1-93.

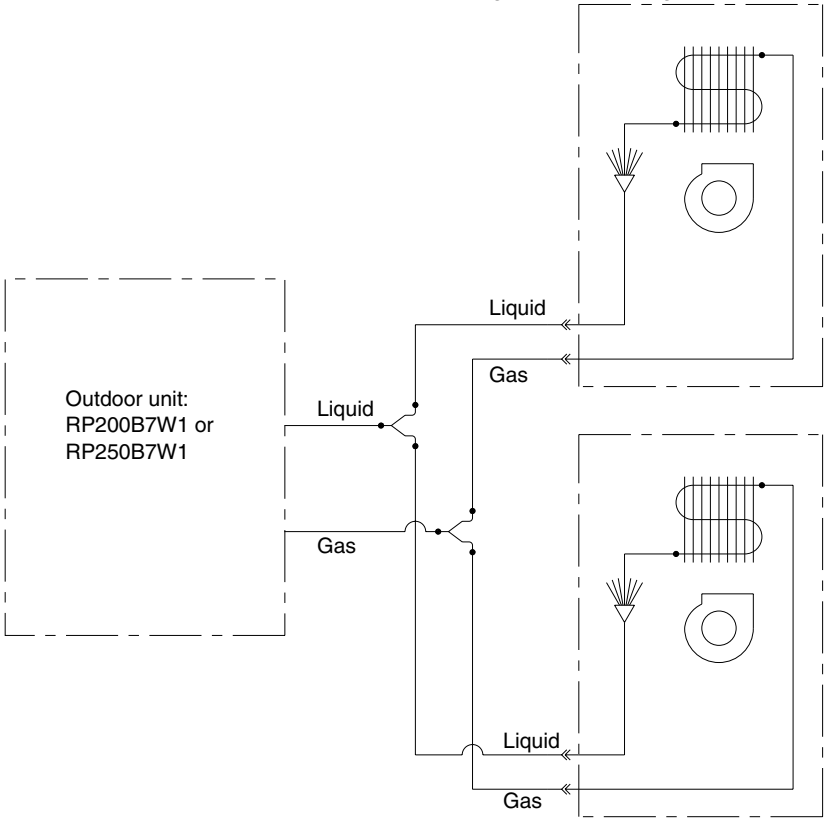
Pipe connection diameters

The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe (flange) | Ø Liquid pipe (flare) |
|-----------|---------------------|-----------------------|
| RP200B7W1 | 28.57 mm | 12.70 mm |
| RP250B7W1 | | 15.87 mm |

4.10 RP200B7W1 and RP250B7W1: Twin

Functional diagram The illustration below shows the functional diagram of the refrigeration circuit.



Components For a description of the components, see 'Piping Components' on page 1–93.

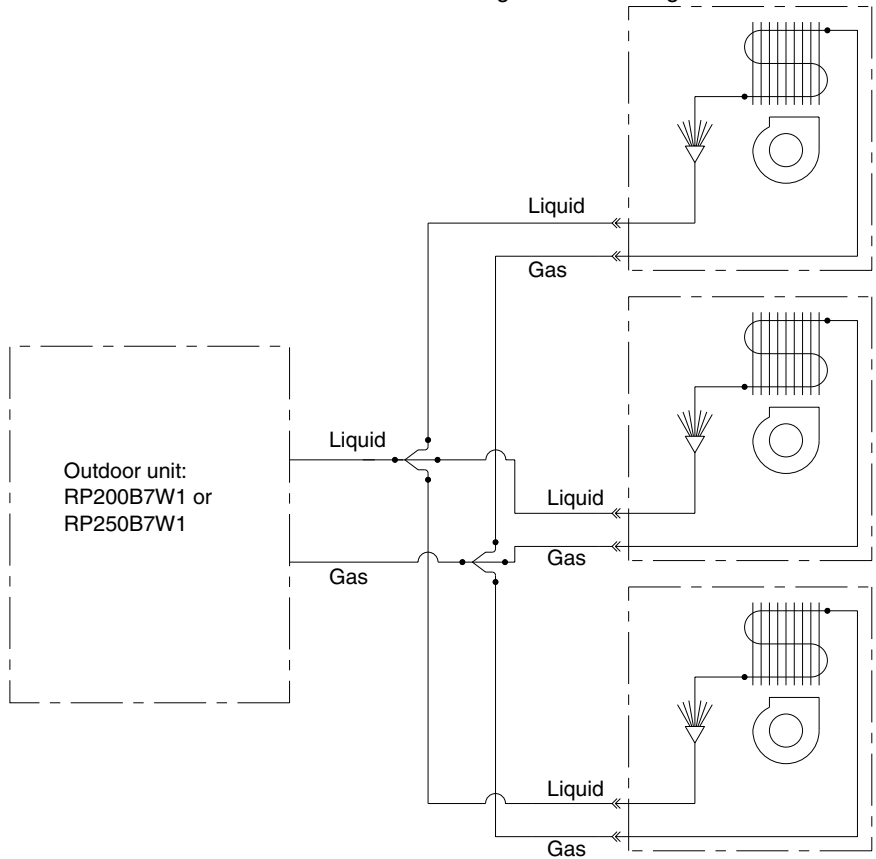
Pipe connection diameters The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe | Ø Liquid pipe |
|-----------|------------|---------------|
| RP200B7W1 | 28.57 mm | 12.70 mm |
| RP250B7W1 | | 15.87 mm |

4.11 RP200B7W1 and RP250B7W1: Triple

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1-93.

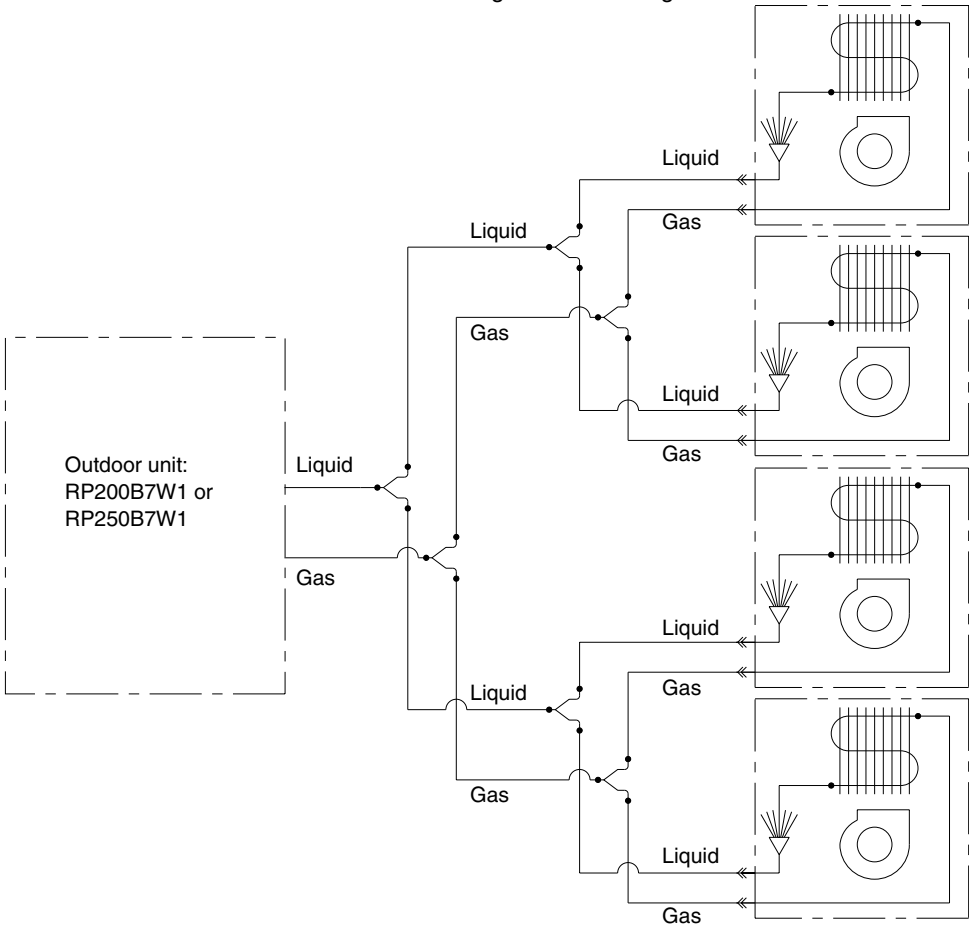
Pipe connection diameters

The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe | Ø Liquid pipe |
|-----------|------------|---------------|
| RP200B7W1 | 28.57 mm | 12.70 mm |
| RP250B7W1 | | 15.87 mm |

4.12 RP200B7W1 and RP250B7W1: Double Twin

Functional diagram The illustration below shows the functional diagram of the refrigeration circuit.



Components For a description of the components, see 'Piping Components' on page 1–93.

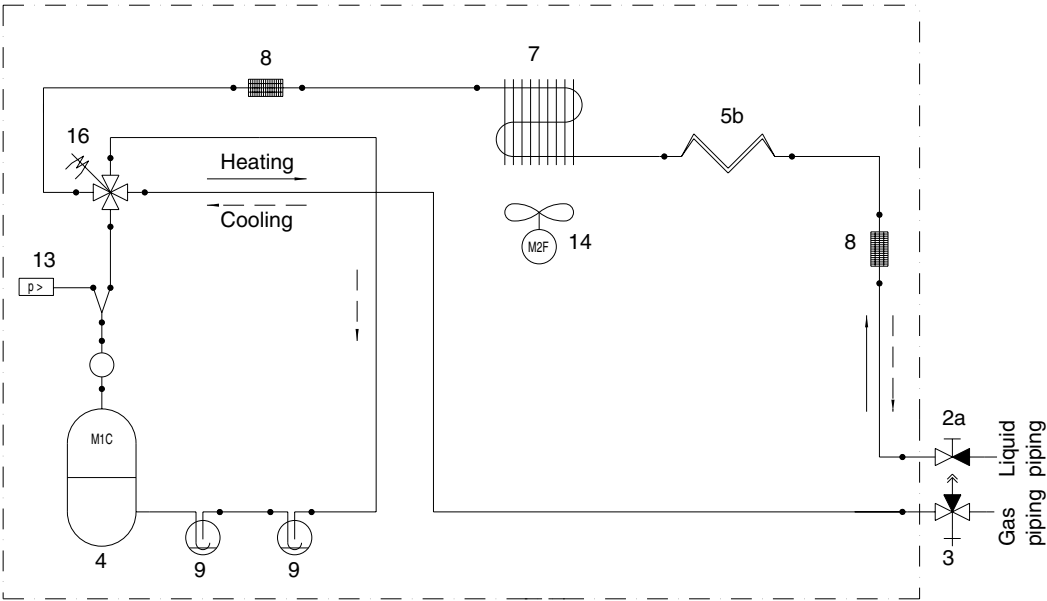
Pipe connection diameters The table below contains the refrigerant pipe connection diameters.

| Model | Between | Ø Gas pipe | Ø Liquid pipe |
|-----------|----------------------------|-------------------|------------------|
| RP200B7W1 | Outdoor unit – branch pipe | 28.57 mm (flange) | 12.70 mm (flare) |
| | Branch pipe – branch pipe | 19.05 mm (flare) | 9.52 mm (flare) |
| | Branch pipe – indoor unit | 12.70 mm (flare) | 6.35 mm (flare) |
| RP250B7W1 | Outdoor unit – branch pipe | 28.57 mm (flange) | 15.87 mm (flare) |
| | Branch pipe – branch pipe | 19.05 mm (flare) | 9.52 mm (flare) |
| | Branch pipe – indoor unit | 15.87 mm (flare) | 9.52 mm (flare) |

4.13 RY35EAZ7V1

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1-93.

Pipe connection diameters

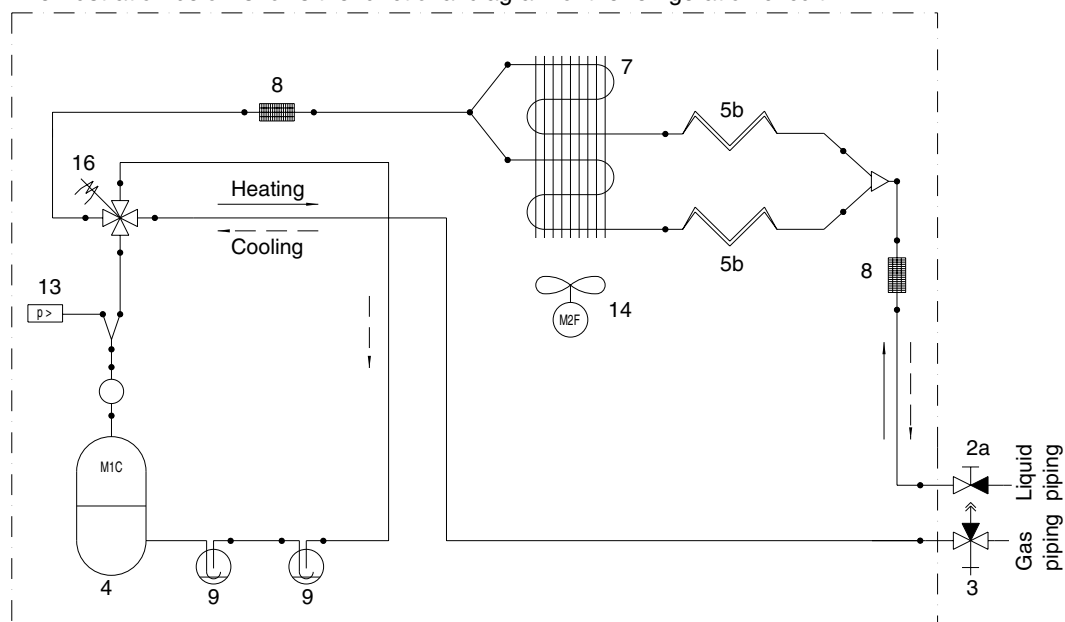
The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe (flare) | Ø Liquid pipe (flare) |
|------------|--------------------|-----------------------|
| RY35EAZ7V1 | 12.70 mm | 6.35 mm |

4.14 RY45EAZ7V1

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1–93.

Pipe connection diameters

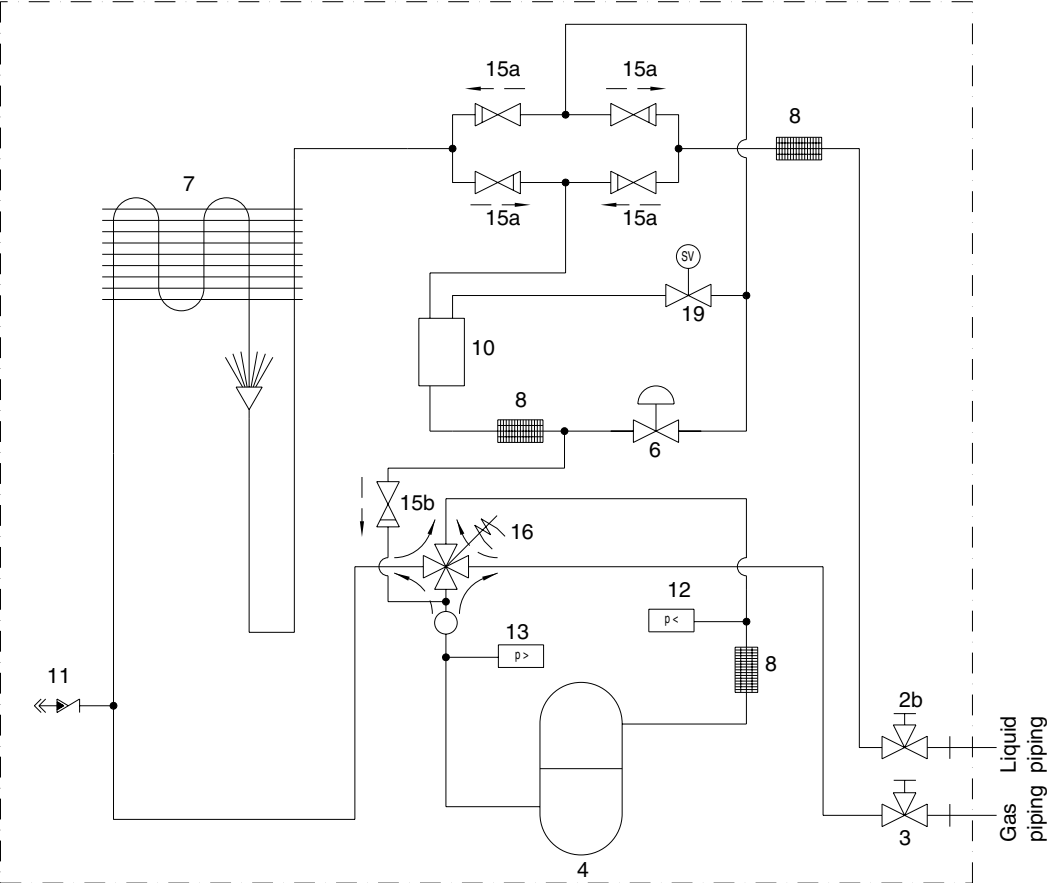
The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe (flare) | Ø Liquid pipe (flare) |
|------------|--------------------|-----------------------|
| RY45EAZ7V1 | 15.87 mm | 6.35 mm |

4.15 RYP71B7V1, RYP71B7W1, RYP100B7V1, RYP100B7W1 and RYP125B7W1

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1-93.

Pipe connection diameters

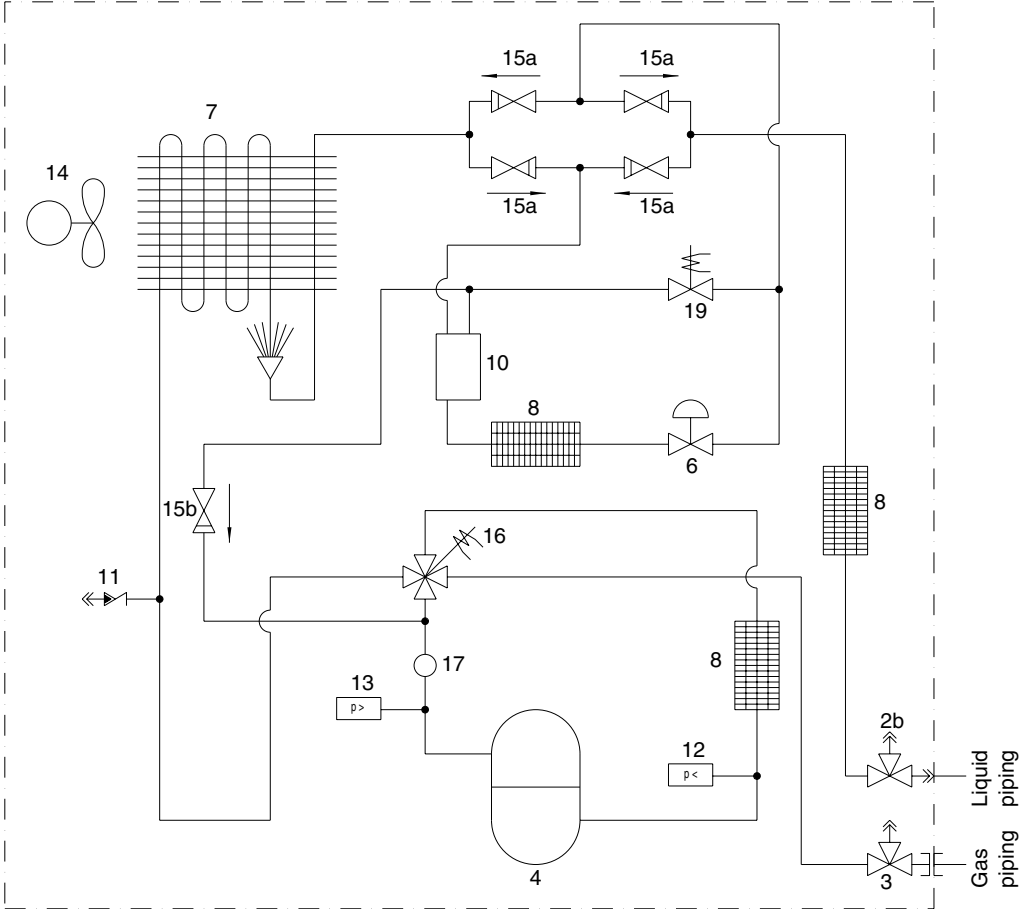
The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe (flare) | Ø Liquid pipe (flare) |
|------------|--------------------|-----------------------|
| RYP71B7V1 | 15.87 mm | 9.52 mm |
| RYP71B7W1 | | |
| RYP100B7V1 | 19.05 mm | |
| RYP100B7W1 | | |
| RYP125B7W1 | | |

4.16 RYP200B7W1 and RYP250B7W1: Outdoor Unit

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1-93.

Pipe connection diameters

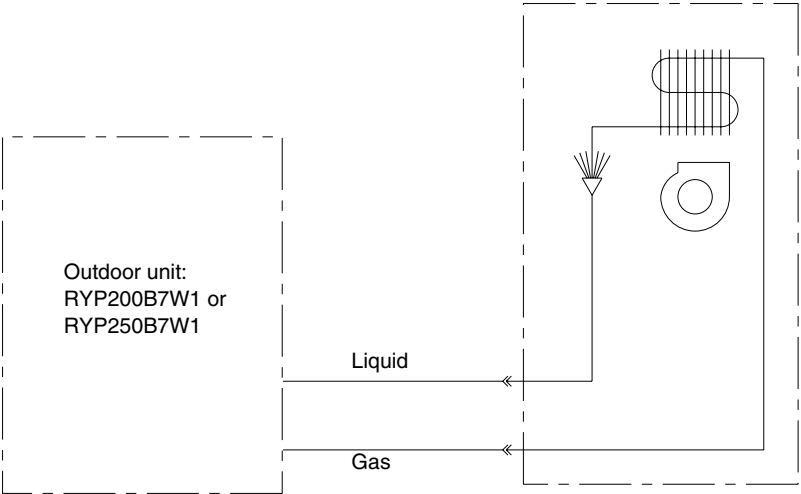
The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe (flange) | Ø Liquid pipe (flare) |
|------------|--|-----------------------|
| RYP200B7W1 | <ul style="list-style-type: none">■ For pair, see page 1-87■ For twin, see page 1-88■ For triple, see page 1-89■ For double twin, see page 1-90 | |
| RYP250B7W1 | | |
| | | |
| | | |

4.17 RYP200B7W1 and RYP250B7W1: Pair

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1-93.

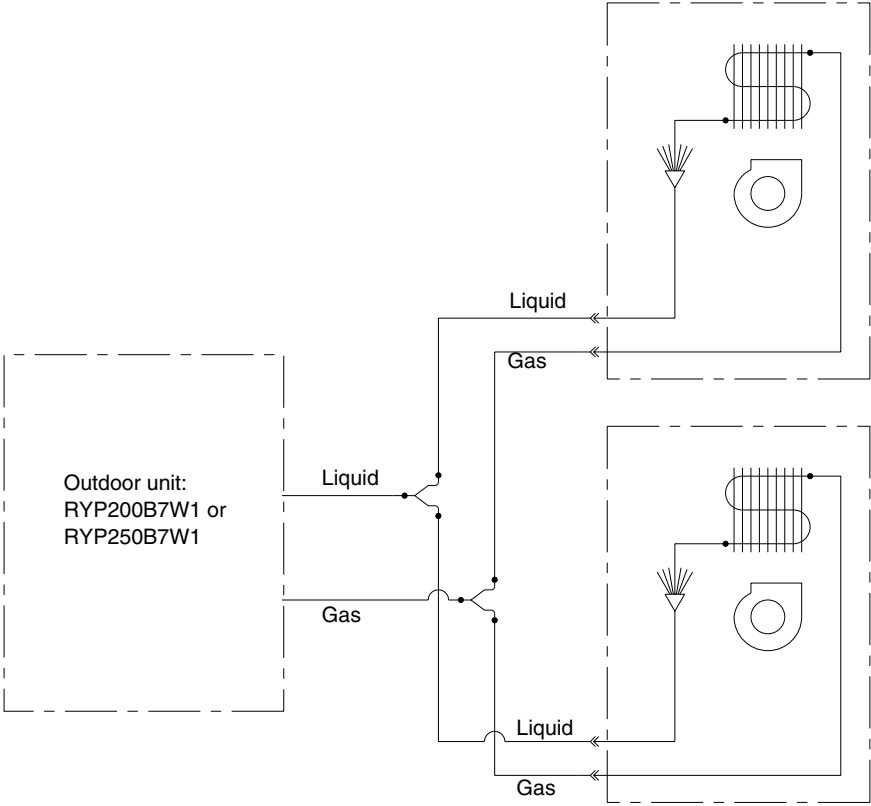
Pipe connection diameters

The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe (flange) | Ø Liquid pipe (flare) |
|------------|---------------------|-----------------------|
| RYP200B7W1 | 28.57 mm | 12.70 mm |
| RYP250B7W1 | | 15.87 mm |

4.18 RYP200B7W1 and RYP250B7W1: Twin

Functional diagram The illustration below shows the functional diagram of the refrigeration circuit.



Components For a description of the components, see 'Piping Components' on page 1–93.

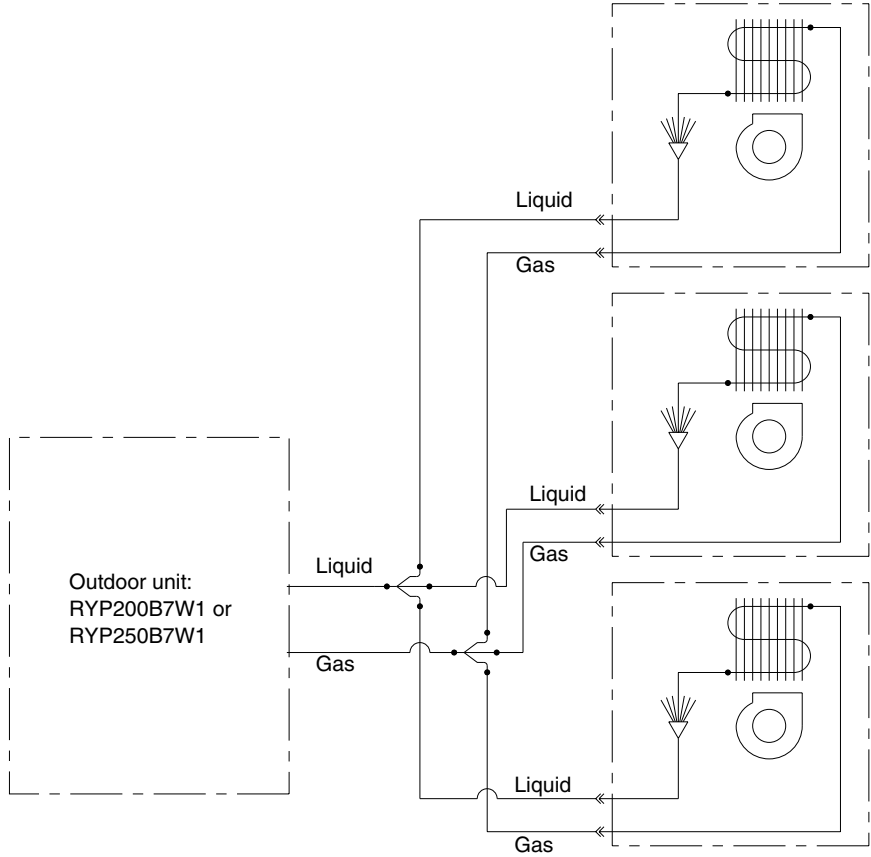
Pipe connection diameters The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe (flange) | Ø Liquid pipe (flare) |
|------------|---------------------|-----------------------|
| RYP200B7W1 | 28.57 mm | 12.70 mm |
| RYP250B7W1 | | 15.87 mm |

4.19 RYP200B7W1 and RYP250B7W1: Triple

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1-93.

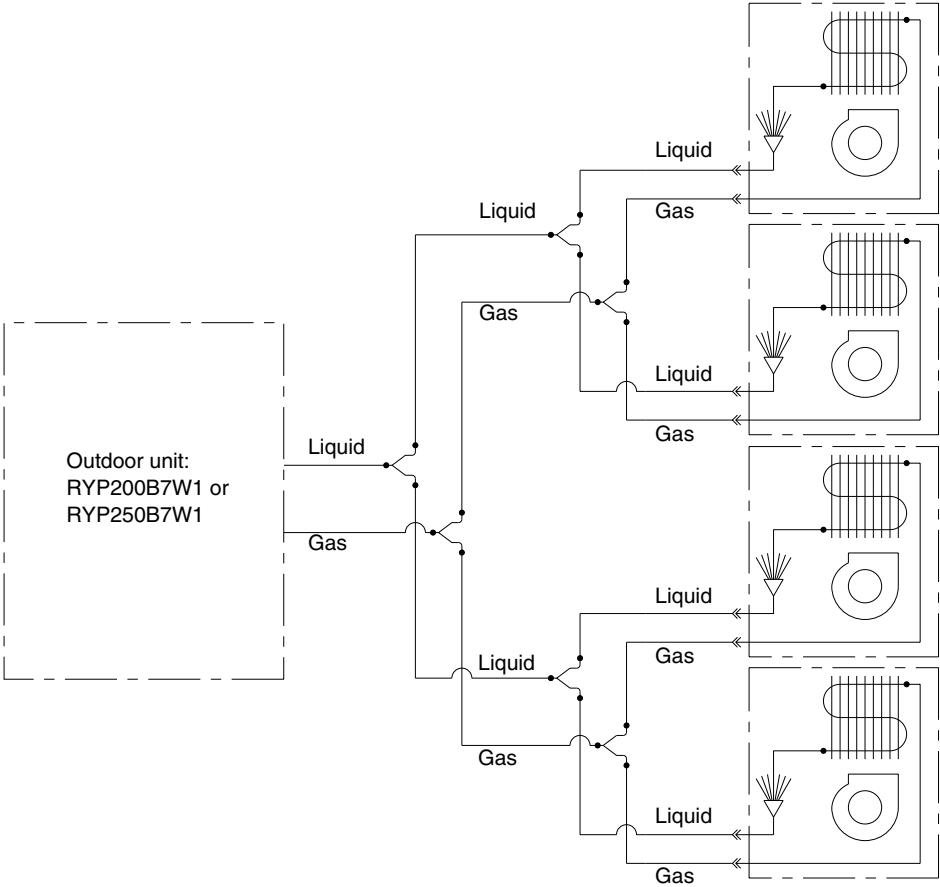
Pipe connection diameters

The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe (flange) | Ø Liquid pipe (flare) |
|------------|---------------------|-----------------------|
| RYP200B7W1 | 28.57 mm | 12.70 mm |
| RYP250B7W1 | | 15.87 mm |

4.20 RYP200B7W1 and RYP250B7W1: Double Twin

Functional diagram The illustration below shows the functional diagram of the refrigeration circuit.



Components For a description of the components, see 'Piping Components' on page 1-93.

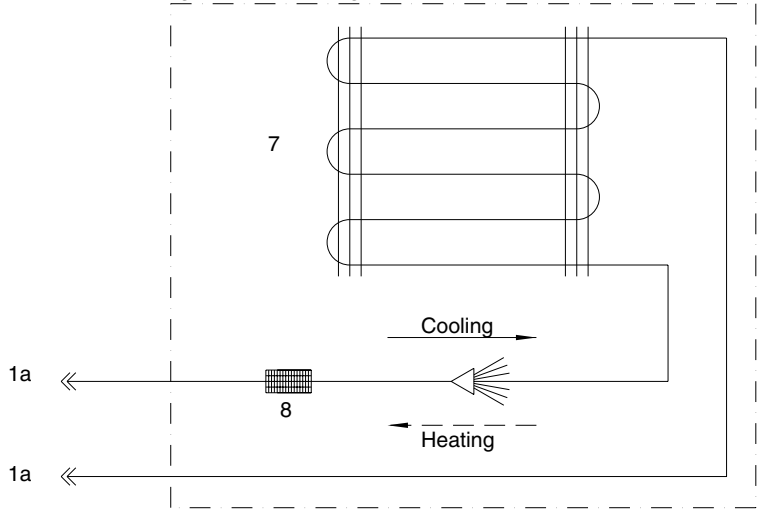
Pipe connection diameters The table below contains the refrigerant pipe connection diameters.

| Model | Between | Ø Gas pipe | Ø Liquid pipe |
|------------|----------------------------|------------|---------------|
| RYP200B7W1 | Outdoor unit – branch pipe | 28.57 mm | 12.70 mm |
| | Branch pipe – branch pipe | 19.05 mm | 9.52 mm |
| | Branch pipe – indoor unit | 12.70 mm | 6.35 mm |
| RYP250B7W1 | Outdoor unit – branch pipe | 28.57 mm | 15.87 mm |
| | Branch pipe – branch pipe | 19.05 mm | 9.52 mm |
| | Branch pipe – indoor unit | 15.87 mm | |

4.21 FHC, FHYBP, FHYC, FHYCP, FUYP, FAYP, FDYP, FHYP and FHYKP

Functional diagram

The illustration below shows the functional diagram of the refrigeration circuit.



Components

For a description of the components, see 'Piping Components' on page 1–93.

Pipe connection diameters

The table below contains the refrigerant pipe connection diameters.

| Model | Ø Gas pipe (flare) | Ø Liquid pipe (flare) |
|--------------|--------------------|-----------------------|
| FHC35BZ7V1 | 12.70 mm | 6.35 mm |
| FHC45BZ7V1 | 15.90 mm | |
| FHC60BZ7V1 | | |
| FHYBP35B7V1 | 12.70 mm | 6.35 mm |
| FHYBP45B7V1 | 15.90 mm | |
| FHYBP60B7V1 | | 9.52 mm |
| FHYBP71B7V1 | | |
| FHYBP100B7V1 | 19.05 | |
| FHYBP125B7V1 | | |
| FHYC35BZ7V1 | 12.70 mm | 6.35 mm |
| FHYC45BZ7V1 | 15.90 mm | |
| FHYCP35B7V1 | 12.70 mm | 6.35 mm |
| FHYCP45B7V1 | 15.90 mm | |
| FHYCP60B7V1 | | 9.52 mm |
| FHYCP71B7V1 | | |
| FHYCP100B7V1 | 19.05 mm | |
| FHYCP125B7V1 | | |

1

| Model | Ø Gas pipe (flare) | Ø Liquid pipe (flare) |
|-------------|--------------------|-----------------------|
| FUYP71BV17 | 15.90 mm | 9.52 mm |
| FUYP100BV17 | 19.05 mm | |
| FUYP125BV17 | | |
| FAYP71BV1 | 15.90 mm | 9.52 mm |
| FAYP100BV1 | 19.05 mm | |
| FDYP125B7V1 | 19.05 mm | 9.52 mm |
| FDYP200B7V1 | 28.57 mm | 12.70 mm |
| FDYP250B7V1 | | 15.90 mm |
| FHYP35BV1 | 12.70 mm | 6.35 mm |
| FHYP45BV1 | | |
| FHYP60BV1 | 15.90 mm | 9.52 mm |
| FHYP71BV1 | | |
| FHYP100BV1 | | |
| FHYP125BV1 | | |
| FHYKP35BV1 | 12.70 mm | 6.35 mm |
| FHYKP45BV1 | | |
| FHYKP60BV1 | 15.90 mm | 9.52 mm |
| FHYKP71BV1 | | |

4.22 Piping Components

Components

The table below contains the different components of the functional diagrams.

| No. | Component | Function / remark |
|-----|--|---|
| 1a | Flare connection | See pipe connection diameter. |
| 1b | Flange connection | |
| 2a | Liquid stop valve | The liquid stop valve is used as shut-off valve in case of a pump-down. |
| 2b | Liquid stop valve with service port | |
| 3 | Gas stop valve with service port | The gas stop valve is used as shut-off valve in case of a pump-down. |
| 4 | Compressor | The compressor can restart after 3 min from last stop. |
| 5a | Capillary tube | The capillary tube allows pressure equalization during a compressor OFF-cycle. |
| 5b | | The capillary tube expands the liquid to enable evaporation in the evaporator. |
| 6 | Electronic expansion valve | The expansion valve expands the liquid to enable evaporation in the evaporator. The opening degree is controlled to obtain the optimum discharge temperature. |
| 7 | Heat exchanger | The heat exchanger is of the multi louvre fin type. Hi-X -tubes and coated waffle louvre fins are used. |
| 8 | Filter | The filter is used to collect impurities, which may enter the system during installation and is also used to avoid blockage of the capillaries and other fine mechanical parts of the unit. |
| 9 | Accumulator | The accumulator is used to separate the gas from the liquid in order to protect the compressor against liquid pumping. |
| 10 | Liquid receiver | The liquid receiver is used to make sure only completely liquefied refrigerant is sent to the expansion valve. It is also used as a container in which surplus refrigerant is stored. |
| 11 | Check valve with service port | The check valve allows you to connect a gauge. |
| 12 | Low-pressure switch | The low-pressure switch stops the operation of the unit when the pressure becomes abnormally low. |
| 13 | High-pressure switch | The high-pressure switch stops the operation of the unit when the pressure becomes abnormally high. |
| 14 | Propeller fan and fan motor | The propeller fan creates air displacement across the heat exchanger. |
| 15a | One-way valve | The one-way valve is used to force the refrigerant liquid to flow through the receiver and the expansion valve in the same direction both in cooling and heating. |
| 15b | | The one-way valve is used to release overpressure in the liquid receiver during stand-still. |
| 16 | 4-way valve (reversing solenoid valve) | The 4-way valve is used to select refrigerant flow in cooling or heating mode. When the 4-way valve switches from ON to OFF, a timer starts counting up to 150 as soon as the cooling or defrosting operation is stopped. This delay time is to eliminate the switching sound. |
| 17 | Muffler | The muffler is used to absorb the refrigerant noise from the compressor. |
| 18 | Low pressure control valve | Control to keep the low pressure > 4.3 bar |
| 19 | Solenoid valve | ■ Y1S: Capacity control solenoid valve ■ Y3S: Liquid injection solenoid valve ■ —: Solenoid valve |
| 20 | Thermistor | ■ R1T: Capacity control thermistor ■ R2T: Liquid injection thermistor |

5 Switch Box Layout

5.1 What Is in This Chapter?

Introduction

This chapter shows the switch box components.

Outdoor units

This chapter contains the following switch box layouts:

| Switch box layout | See page |
|--|----------|
| 5.2–R35GZ7V11 and R45GZ7V11 | 1–96 |
| 5.3–R45GZ7W11 | 1–97 |
| 5.4–R60GZ7W1 | 1–98 |
| 5.5–MA56GZ7W11 | 1–99 |
| 5.6–MA90GZ7W11 | 1–100 |
| 5.7–RP71B7V1 and RYP71B7V1 | 1–101 |
| 5.8–RP71B7W1, RP71B7T1 and RYP71B7W1 | 1–102 |
| 5.9–RP100B7V1 and RYP100B7V1 | 1–103 |
| 5.10–RP100B7W1, RP100B7T1, RP125B7W1, RP125B7T1, RYP100B7W1 and RYP125B7W1 | 1–104 |
| 5.11–RP200B7W1, RP250B7W1, RYP200B7W1 and RYP250B7W1 | 1–105 |
| 5.12–RY35EAZ7V1 and RY45EAZ7V1 | 1–106 |

Indoor units

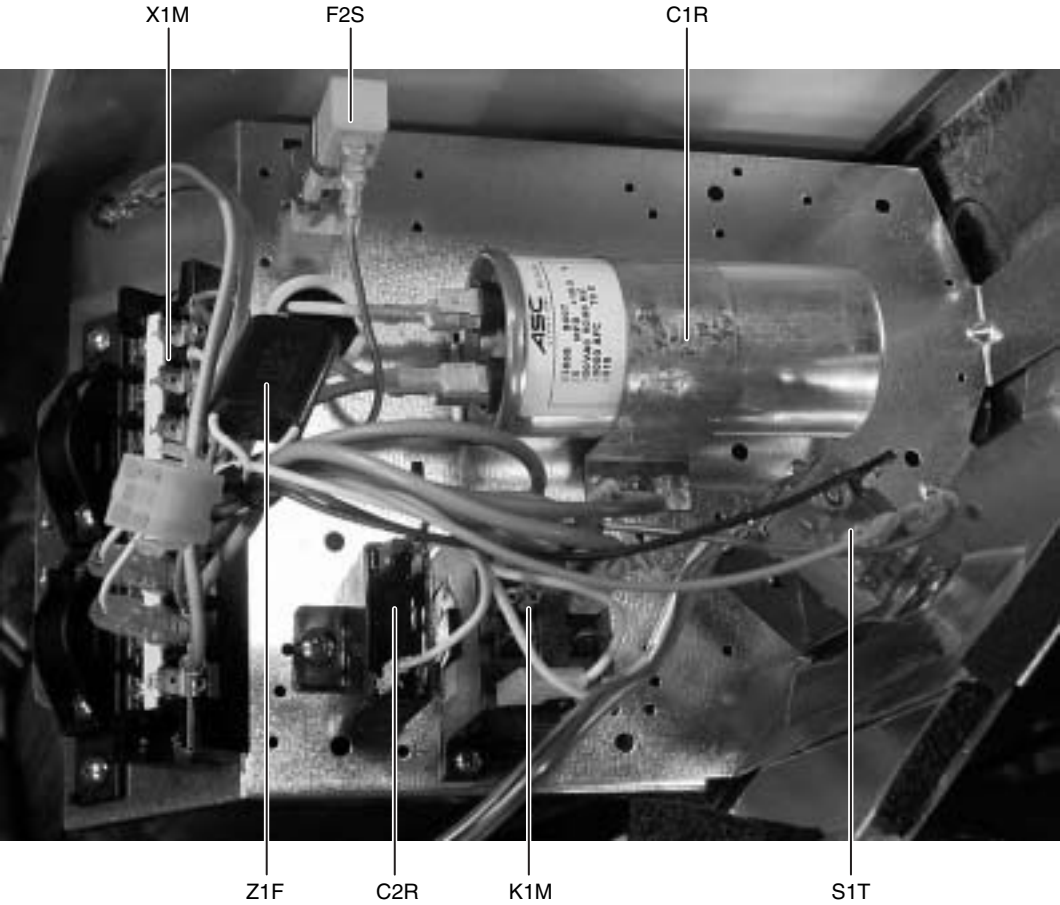
This chapter contains the following switch box layouts:

| Switch box layout | See page |
|--|----------|
| 5.13–FHC35BZ7V1, FHC45BZ7V1, FHC60BZ7V1, FHYC35BZ7V1, FHYC45BZ7V1, FHYCP35B7V1, FHYCP45B7V1, FHYCP60B7V1, FHYCP71B7V1, FHYCP100B7V1 and FHYCP125B7V1 | 1–107 |
| 5.14–FHYBP35B7V1, FHYBP45B7V1, FHYBP60B7V1, FHYBP71B7V1, FHYBP100B7V1 and FHYBP125B7V1 | 1–108 |
| 5.15–FDYP125B7V1, FDYP200B7V1 and FDYP250B7V1 | 1–109 |
| 5.16–FHYP35BV1, FHYP45BV1, FHYP60BV1, FHYP71BV1, FHYP100BV1 and FHYP125BV1 | 1–110 |
| 5.17–FUYP71BV17, FUYP100BV17 and FUYP125BV17 | 1–111 |
| 5.18–FAYP71BV1 and FAYP100BV1 | 1–112 |
| 5.19–FHYKP35BV1, FHYKP45BV1, FHYKP60BV1 and FHYKP71BV1 | 1–113 |

5.2 R35GZ7V11 and R45GZ7V11

Switch box

The illustration below shows the switch box layout.



Components

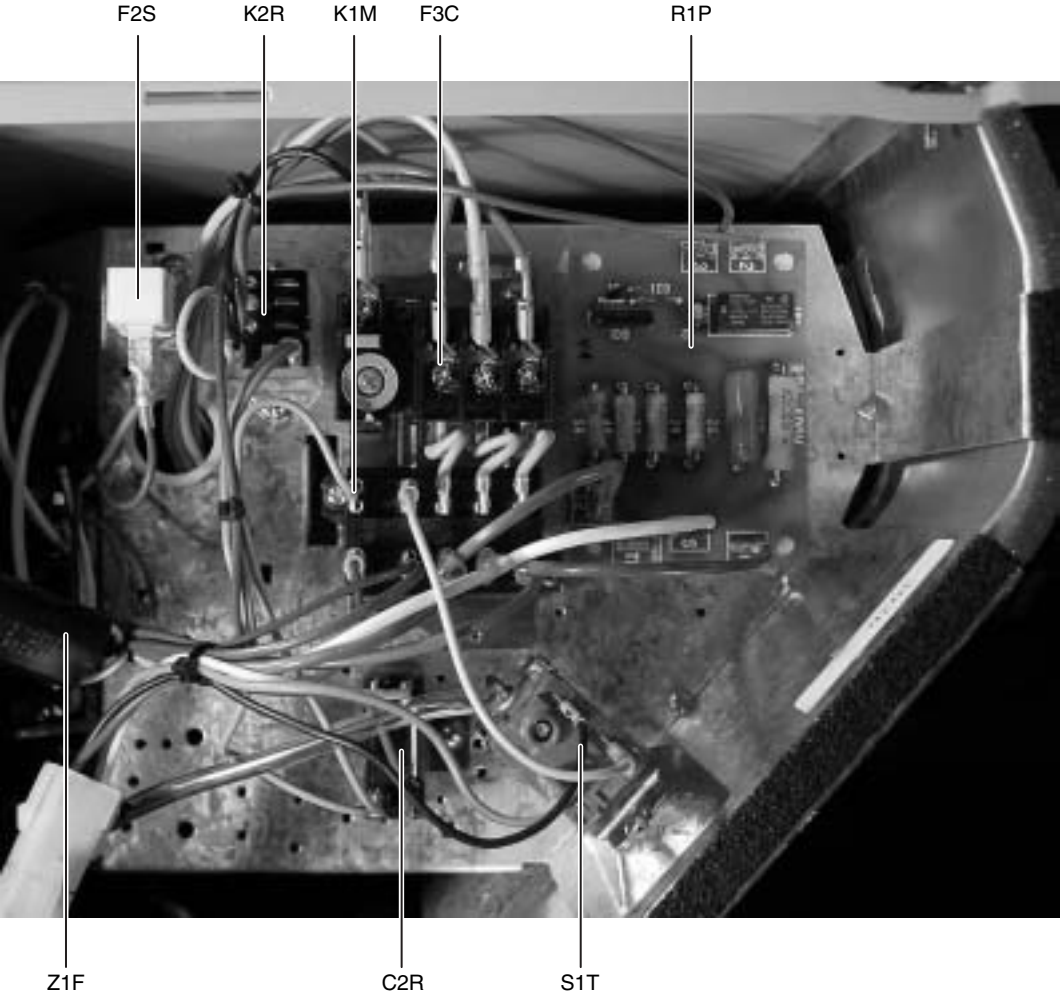
The table below contains the components of the switch box.

| Symbol | Component |
|--------|-------------------------------|
| X1M | Terminal strip (field wiring) |
| F2S | Surge arrester |
| C1R | Compressor running capacitor |
| S1T | Thermostat |
| K1M | Magnetic contactor (M1C) |
| C2R | Fan motor capacitor |
| Z1F | Noise filter |

5.3 R45GZ7W11

Switch box

The illustration below shows the switch box layout.



Components

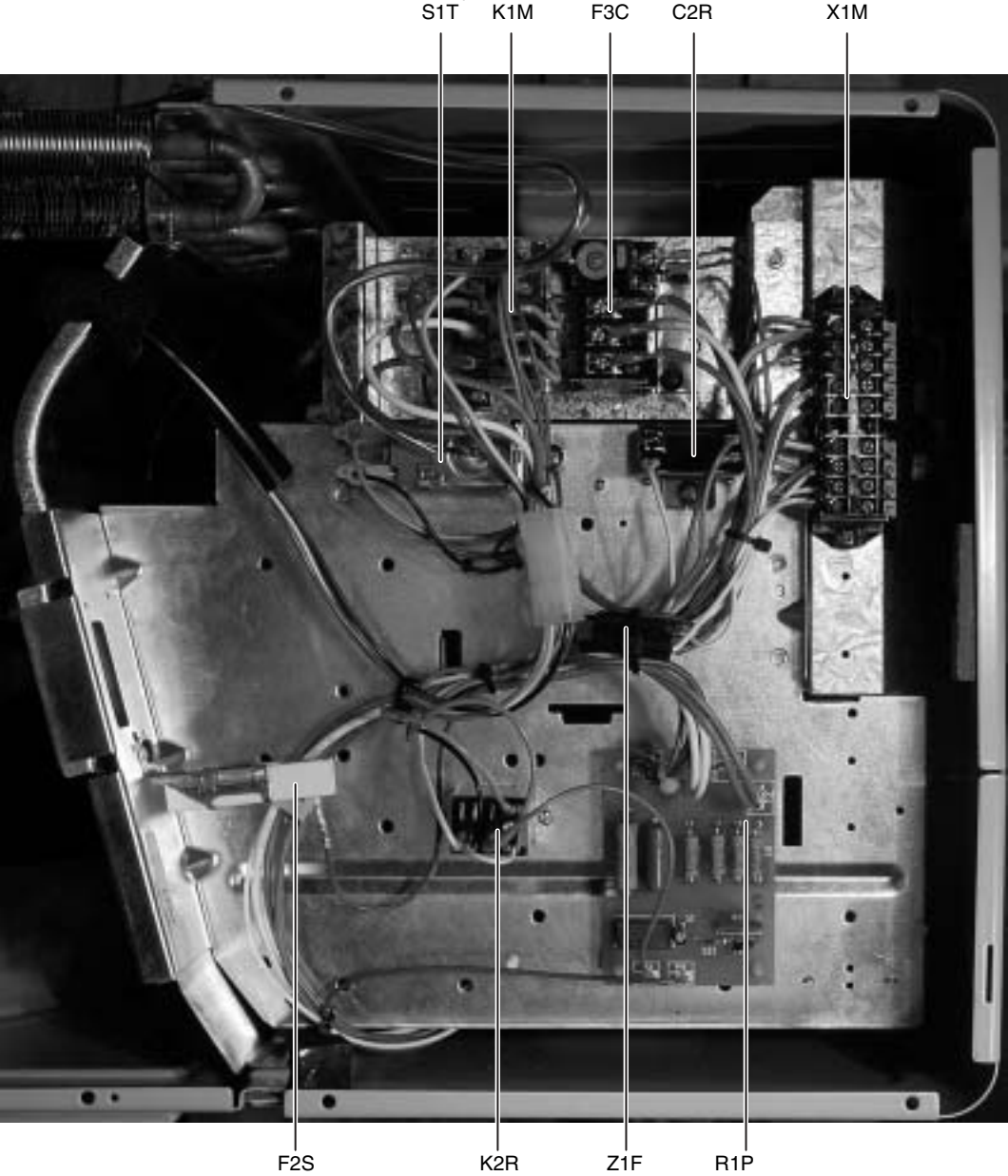
The table below contains the components of the switch box.

| Symbol | Component |
|--------|-------------------------|
| F2S | Surge arrester |
| K2R | Magnetic relay |
| K1M | Magnetic contactor |
| F3C | Overcurrent relay |
| R1P | Reverse phase protector |
| S1T | Thermostat |
| C2R | Fan motor capacitor |
| Z1F | Noise filter |

5.4 R60GZ7W1

Switch box

The illustration below shows the switch box layout.



Components

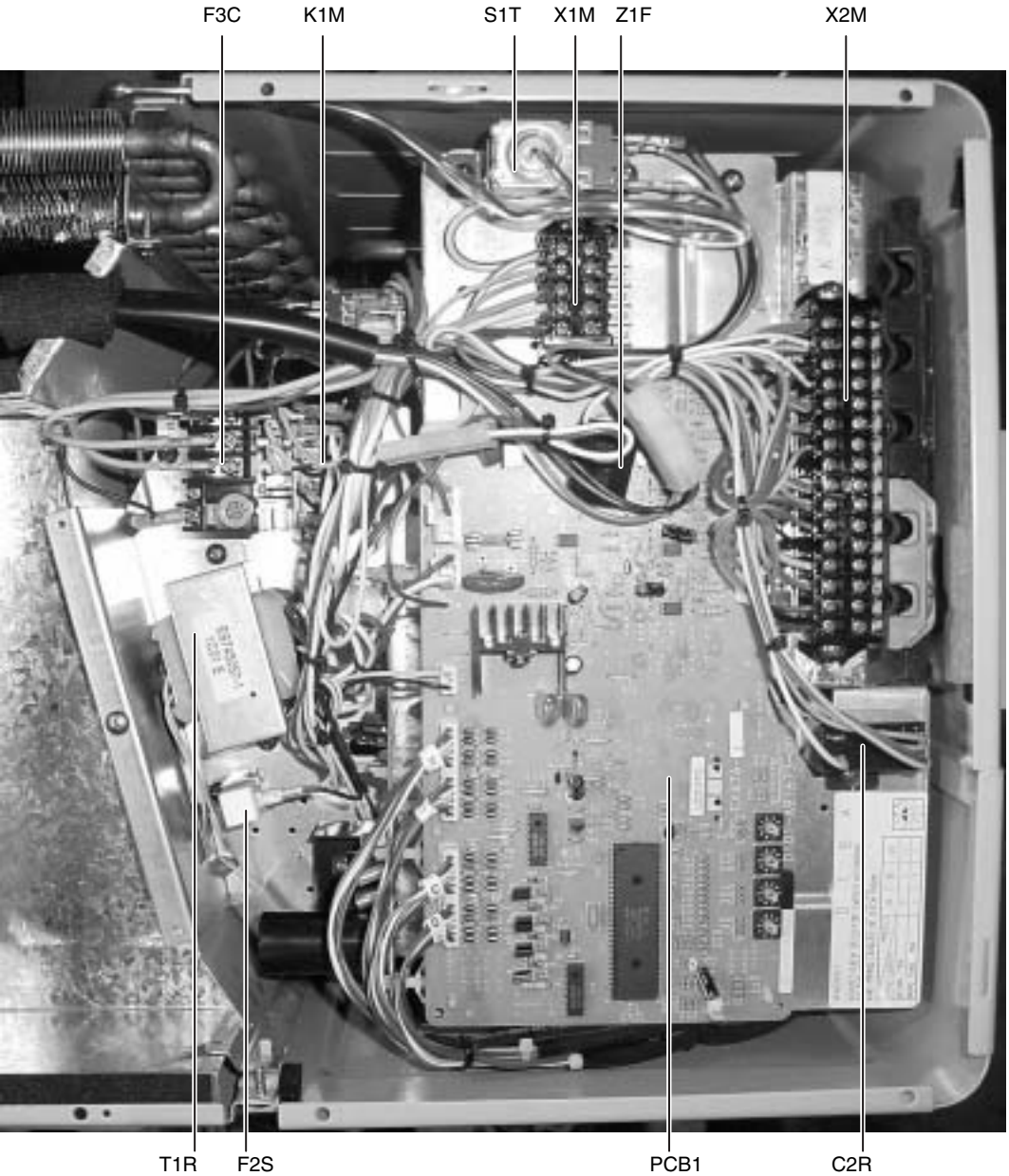
The table below contains the components of the switch box.

| Symbol | Component | Symbol | Component |
|--------|---------------------|--------|-------------------------|
| S1T | Thermostat | R1P | Reverse phase protector |
| K1M | Magnetic contactor | Z1F | Noise filter |
| F3C | Overcurrent relay | K2R | Magnetic relay |
| C2R | Fan motor capacitor | F2S | Surge arrester |
| X1M | Terminal strip | — | |

5.5 MA56GZ7W11

Switch box

The illustration below shows the switch box layout.



Components

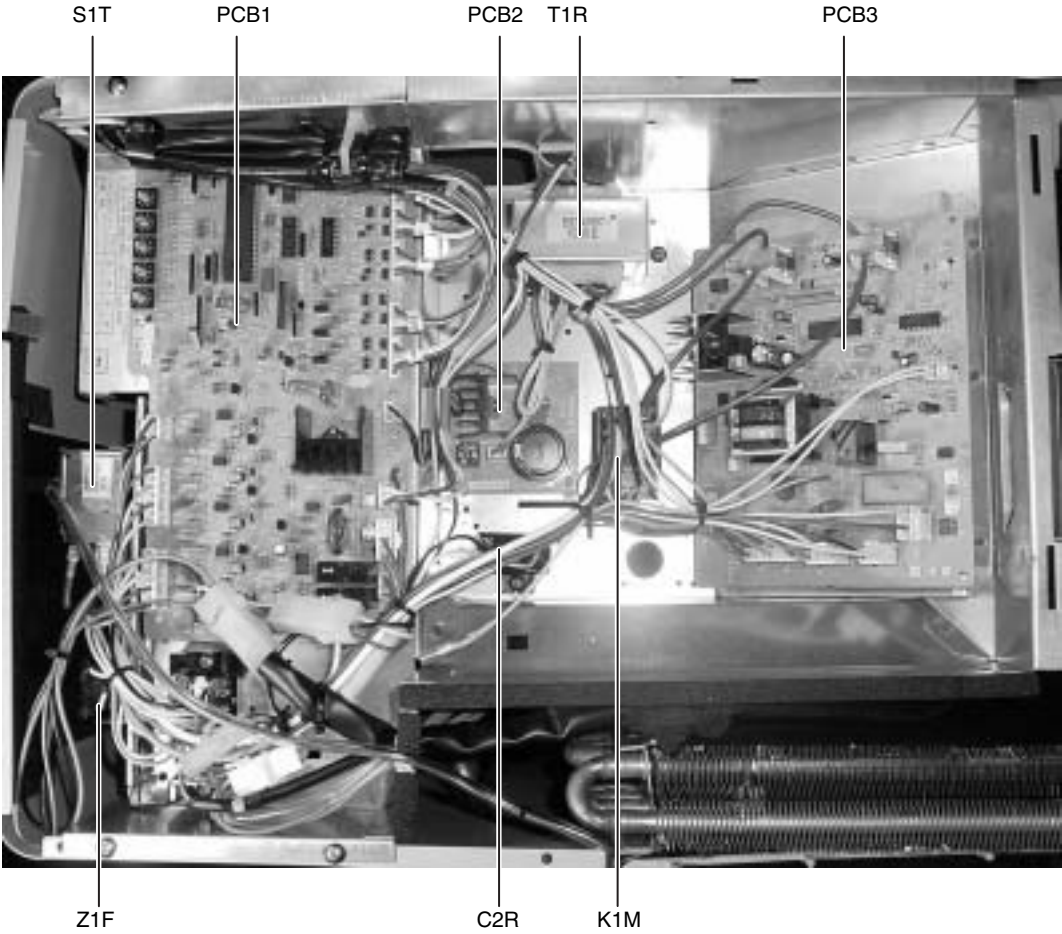
The table below contains the components of the switch box.

| Symbol | Component | Symbol | Component |
|--------|--------------------|--------|-----------------------|
| F3C | Overcurrent relay | X2M | Terminal strip |
| K1M | Magnetic contactor | C2R | Fan motor capacitor |
| S1T | Thermostat | PCB1 | Printed circuit board |
| X1M | Terminal strip | F2S | Surge arrester |
| Z1F | Noise filter | T1R | Transformer |

5.6 MA90GZ7W11

Switch box

The illustration below shows the switch box layout.



Components

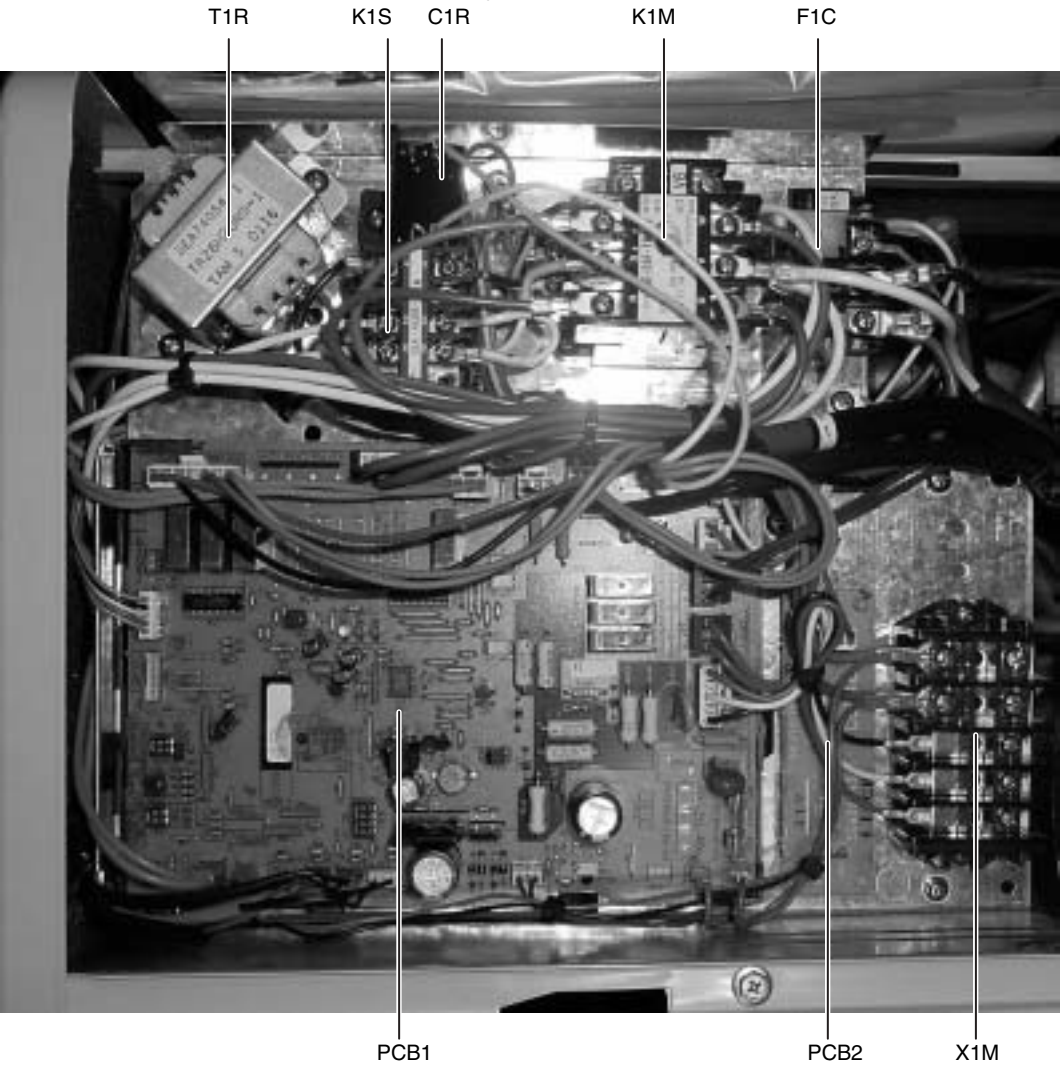
The table below contains the components of the switch box.

| Symbol | Component |
|--------|-----------------------|
| S1T | Thermostat |
| PCB1 | Printed circuit board |
| PCB2 | Printed circuit board |
| T1R | Transformer |
| PCB3 | Printed circuit board |
| K1M | Compressor contactor |
| C2R | Running capacitor |
| Z1F | Noise filter |

5.7 RP71B7V1 and RYP71B7V1

Switch box

The illustration below shows the switch box layout.



Components

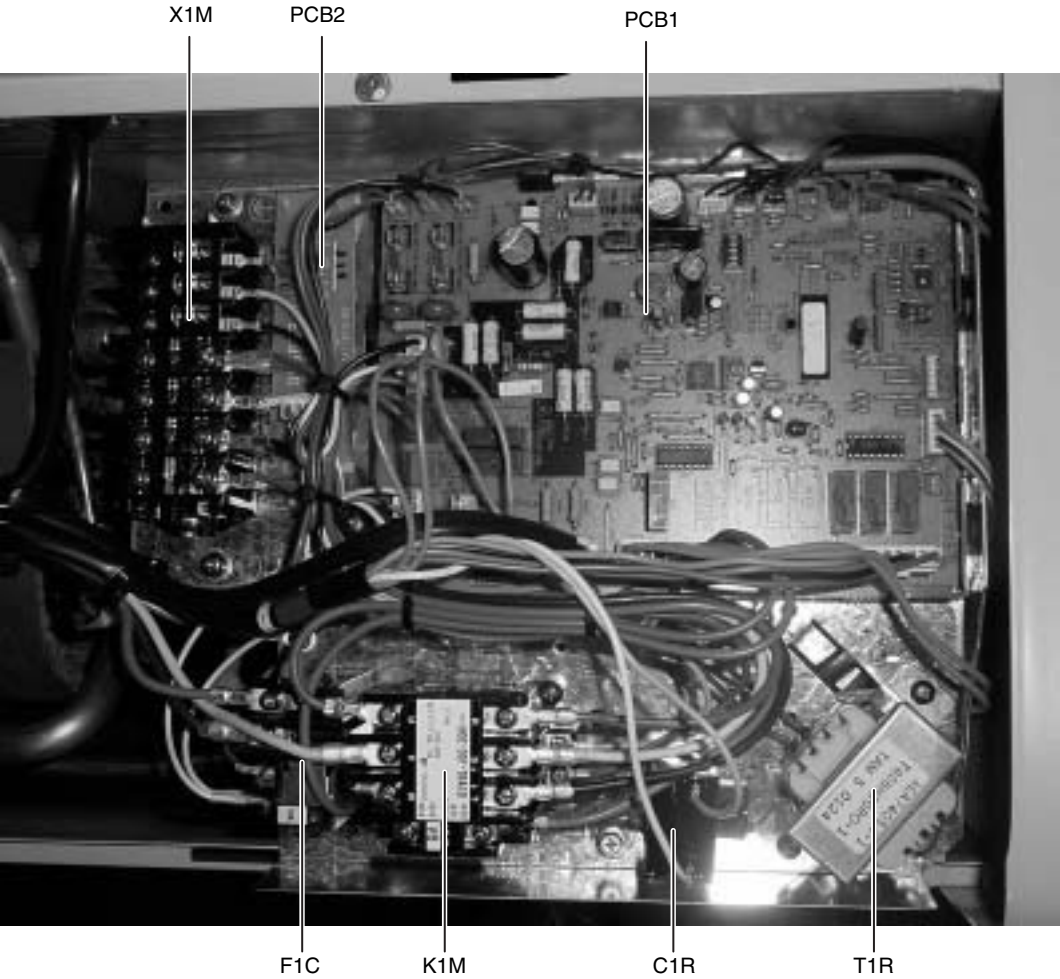
The table below contains the components of the switch box.

| Symbol | Component |
|--------|---------------------------------------|
| T1R | Transformer |
| K1S | Starting contactor |
| C1R | Fan motor capacitor |
| K1M | Magnetic contactor |
| F1C | Overcurrent relay |
| X1M | Terminal strip |
| PCB1 | Printed circuit board |
| PCB2 | Printed circuit board (interlock PCB) |

5.8 RP71B7W1, RP71B7T1 and RYP71B7W1

Switch box

The illustration below shows the switch box layout.



Components

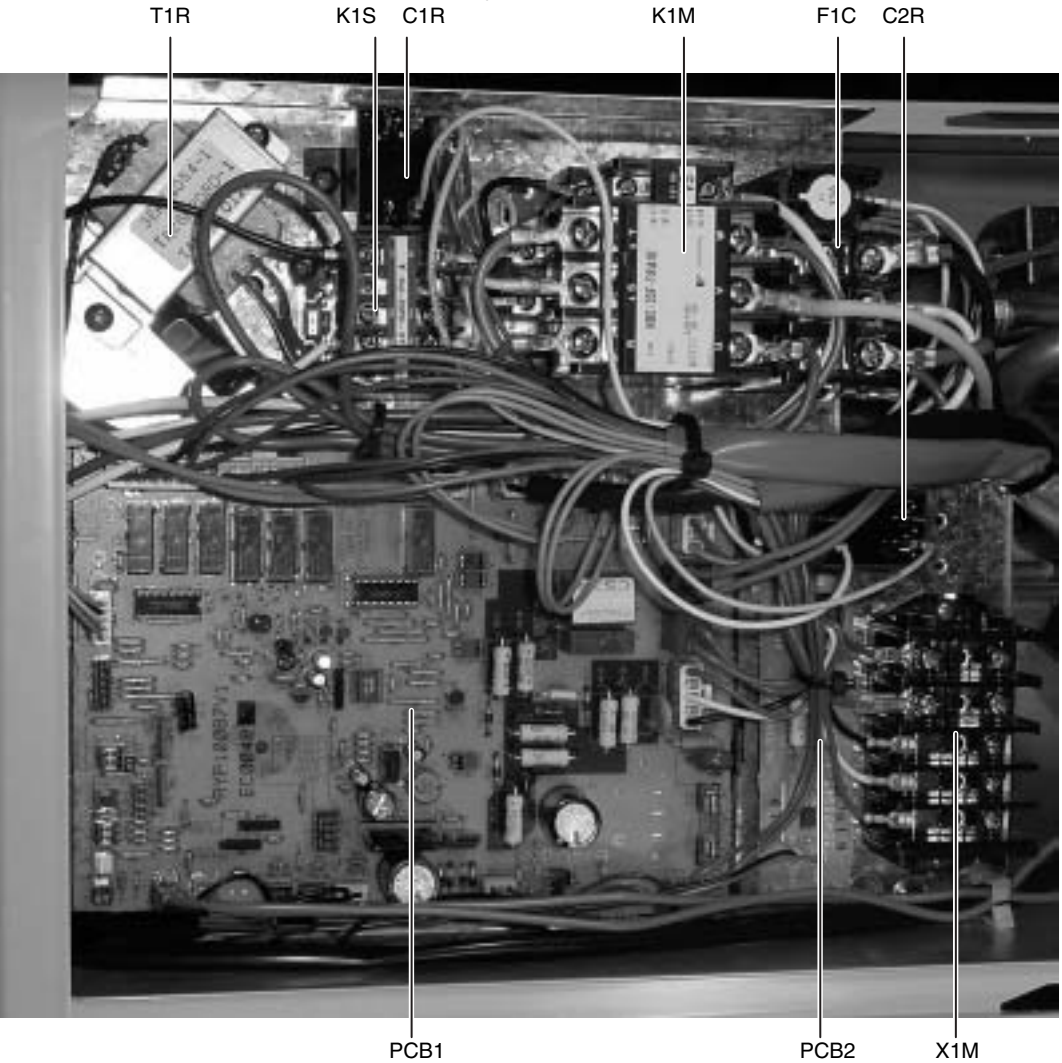
The table below contains the components of the switch box.

| Symbol | Component |
|--------|---------------------------------------|
| X1M | Terminal strip |
| PCB1 | Printed circuit board |
| PCB2 | Printed circuit board (interlock PCB) |
| T1R | Transformer |
| C1R | Fan motor capacitor |
| K1M | Magnetic contactor |
| F1C | Overcurrent relay |

5.9 RP100B7V1 and RYP100B7V1

Switch box

The illustration below shows the switch box layout.



Components

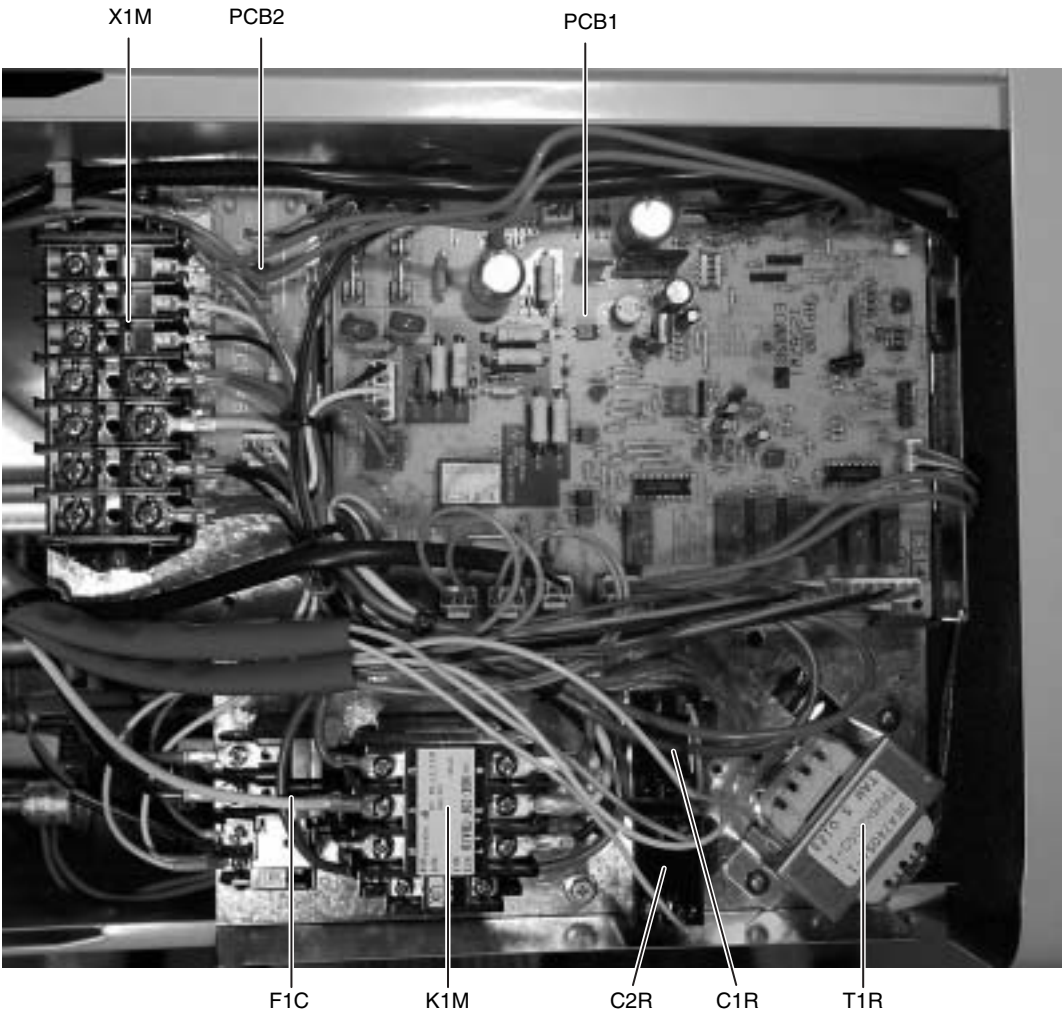
The table below contains the components of the switch box.

| Symbol | Component |
|--------|---------------------------------------|
| T1R | Transformer |
| K1S | Starting contactor |
| C1R | Fan motor capacitor 1 |
| C2R | Fan motor capacitor 2 |
| K1M | Magnetic contactor |
| F1C | Overcurrent relay |
| X1M | Terminal strip |
| PCB1 | Printed circuit board |
| PCB2 | Printed circuit board (interlock PCB) |

5.10 RP100B7W1, RP100B7T1, RP125B7W1, RP125B7T1, RYP100B7W1 and RYP125B7W1

Switch box

The illustration below shows the switch box layout.



Components

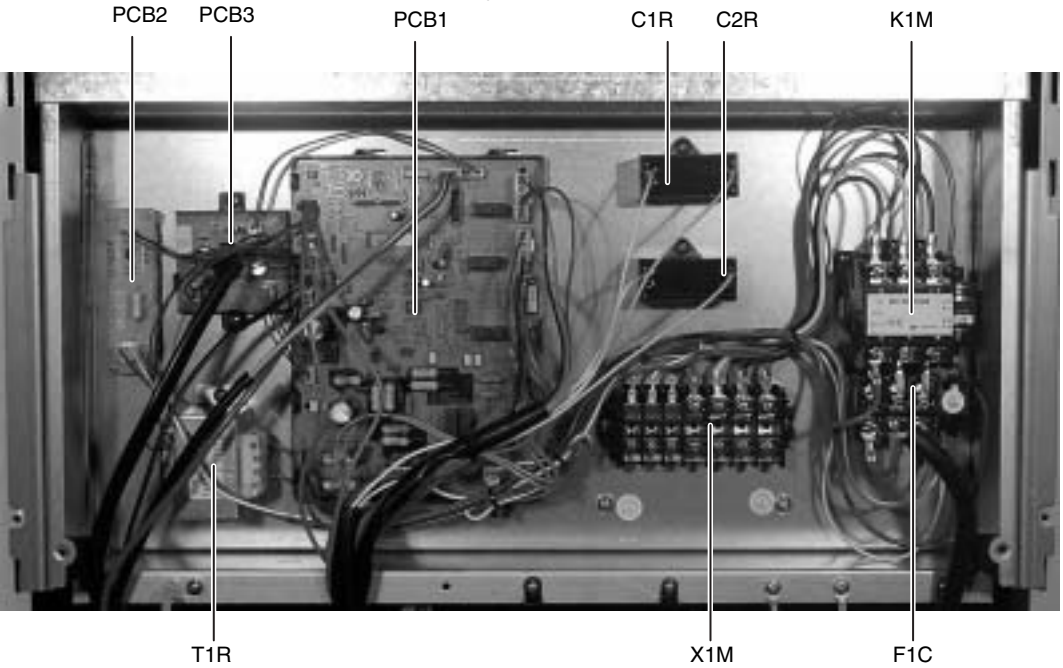
The table below contains the components of the switch box.

| Symbol | Component |
|--------|---------------------------------------|
| X1M | Terminal strip |
| PCB1 | Printed circuit board |
| PCB2 | Printed circuit board (interlock PCB) |
| T1R | Transformer |
| C1R | Fan motor capacitor 1 |
| C2R | Fan motor capacitor 2 |
| K1M | Magnetic contactor |
| F1C | Overcurrent relay |

5.11 RP200B7W1, RP250B7W1, RYP200B7W1 and RYP250B7W1

Switch box

The illustration below shows the switch box layout.



Components

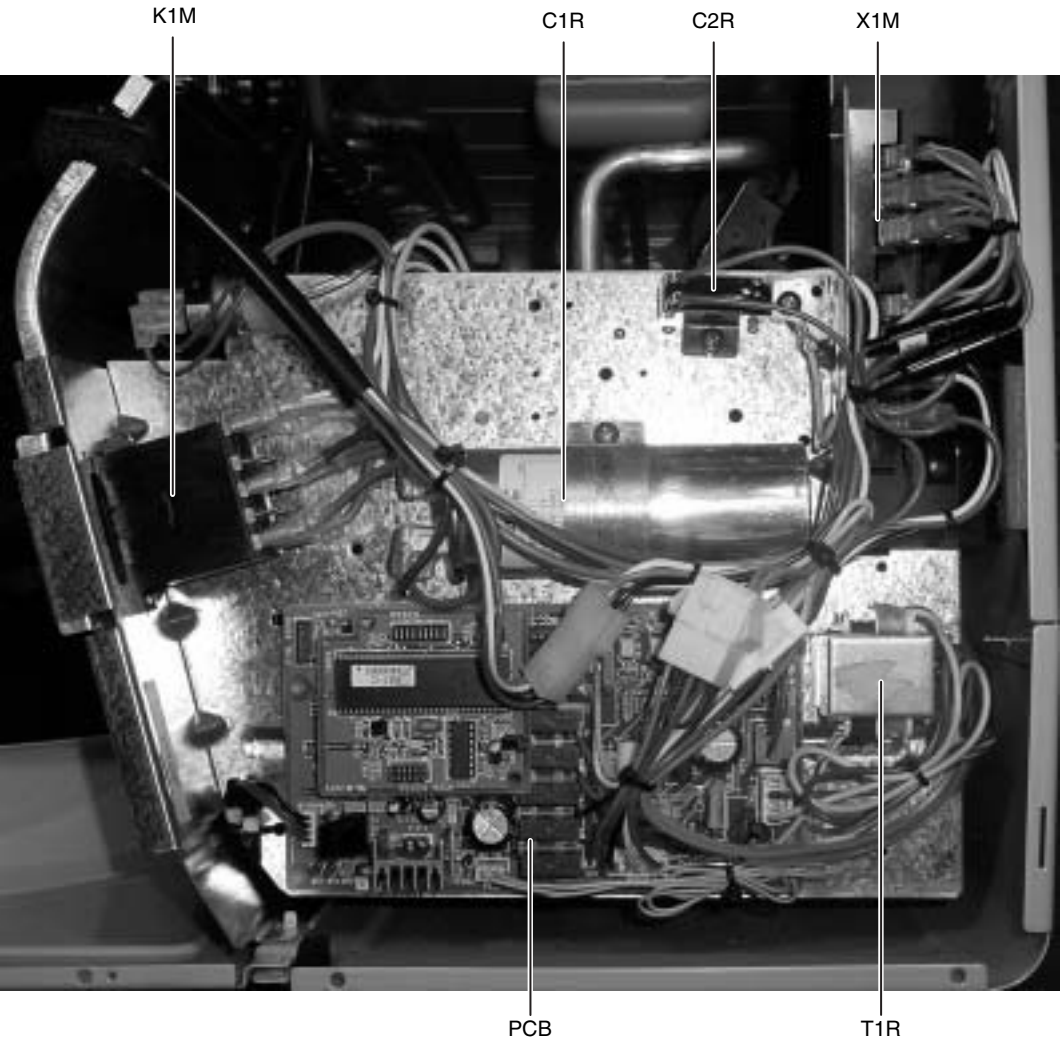
The table below contains the components of the switch box.

| Symbol | Component |
|--------|--|
| PCB1 | Printed circuit board |
| PCB2 | Printed circuit board (interlock PCB) |
| PCB3 | Printed circuit board (power supply PCB) |
| C1R | Fan motor capacitor 1 |
| C2R | Fan motor capacitor 2 |
| K1M | Magnetic contactor |
| F1C | Overcurrent relay |
| X1M | Terminal strip |
| T1R | Transformer |

5.12 RY35EAZ7V1 and RY45EAZ7V1

Switch box

The illustration below shows the switch box layout.



Components

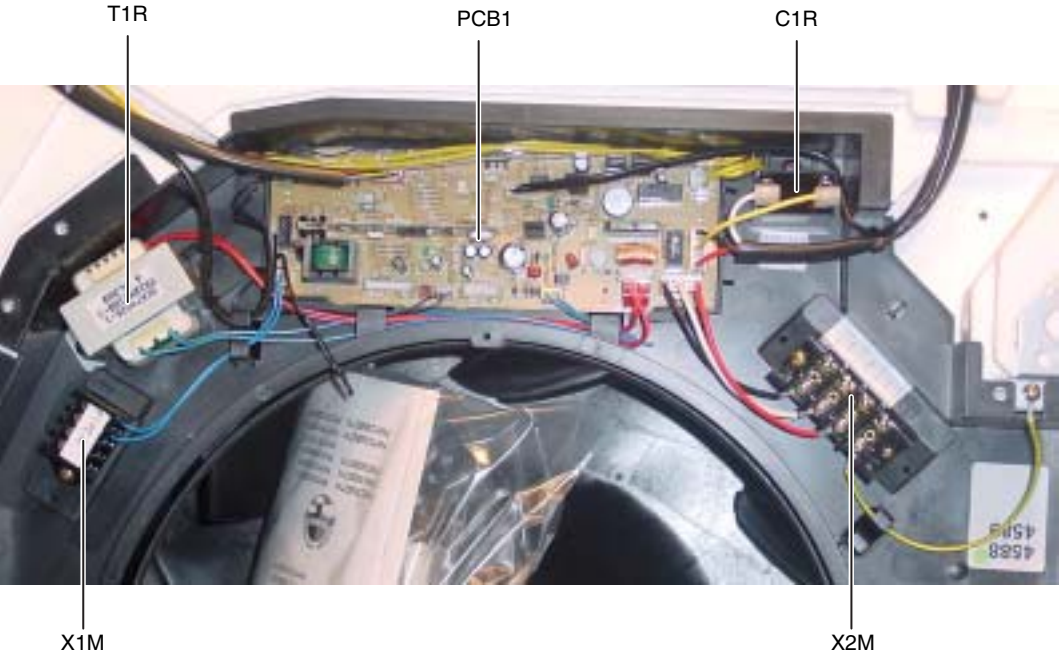
The table below contains the components of the switch box.

| Symbol | Component |
|--------|------------------------------|
| K1M | Magnetic contactor |
| C1R | Compressor running capacitor |
| C2R | Fan motor capacitor |
| X1M | Terminal strip |
| T1R | Transformer |
| PCB | Printed circuit board |

5.13 FHC35BZ7V1, FHC45BZ7V1, FHC60BZ7V1, FHYC35BZ7V1, FHYC45BZ7V1, FHYCP35B7V1, FHYCP45B7V1, FHYCP60B7V1, FHYCP71B7V1, FHYCP100B7V1 and FHYCP125B7V1

Switch box

The illustration below shows the switch box layout.



Components

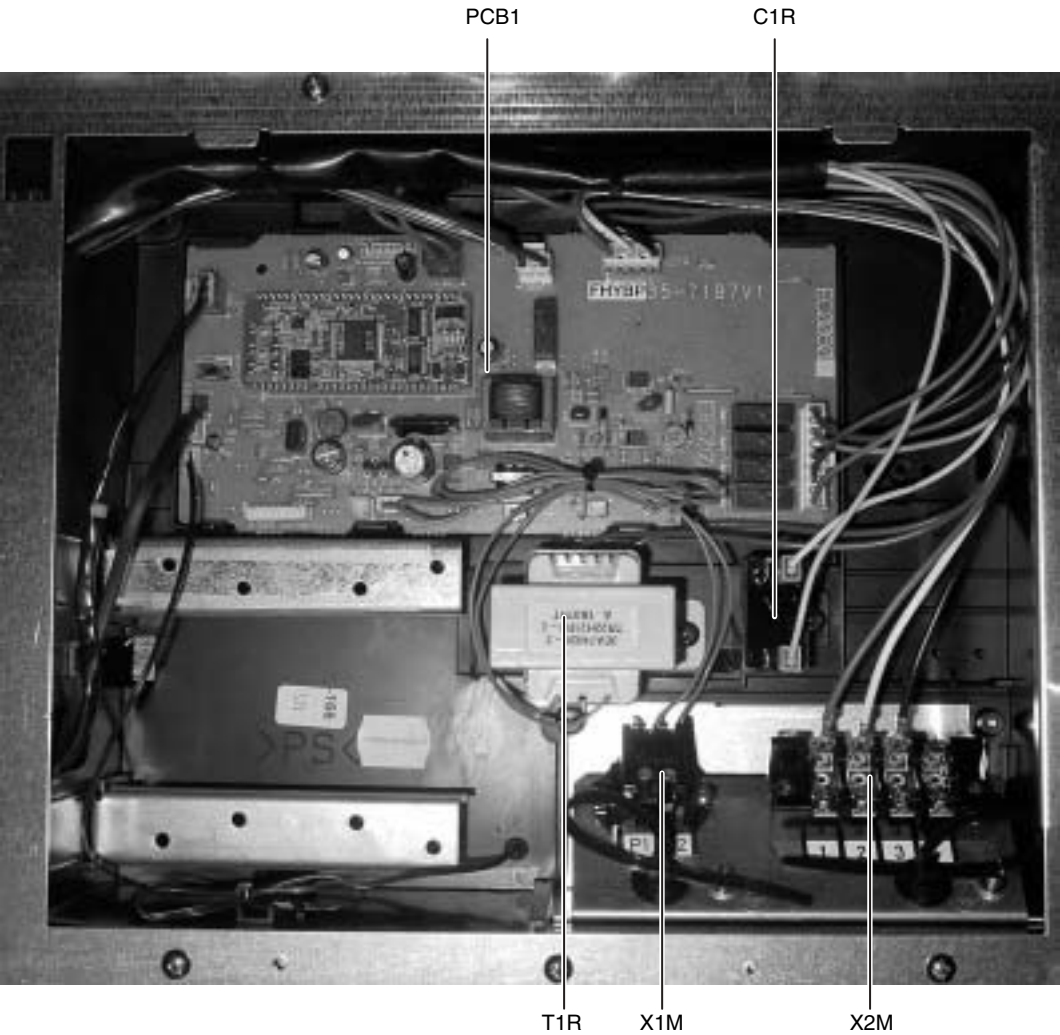
The table below contains the components of the switch box.

| Symbol | Component |
|--------|---|
| T1R | Transformer |
| PCB1 | Printed circuit board |
| C1R | Fan motor capacitor |
| X2M | Terminal strip (interconnection wiring) |
| X1M | Terminal strip (for remote control P1/P2) |

5.14 FHYBP35B7V1, FHYBP45B7V1, FHYBP60B7V1, FHYBP71B7V1, FHYBP100B7V1 and FHYBP125B7V1

Switch box

The illustration below shows the switch box layout.



Components

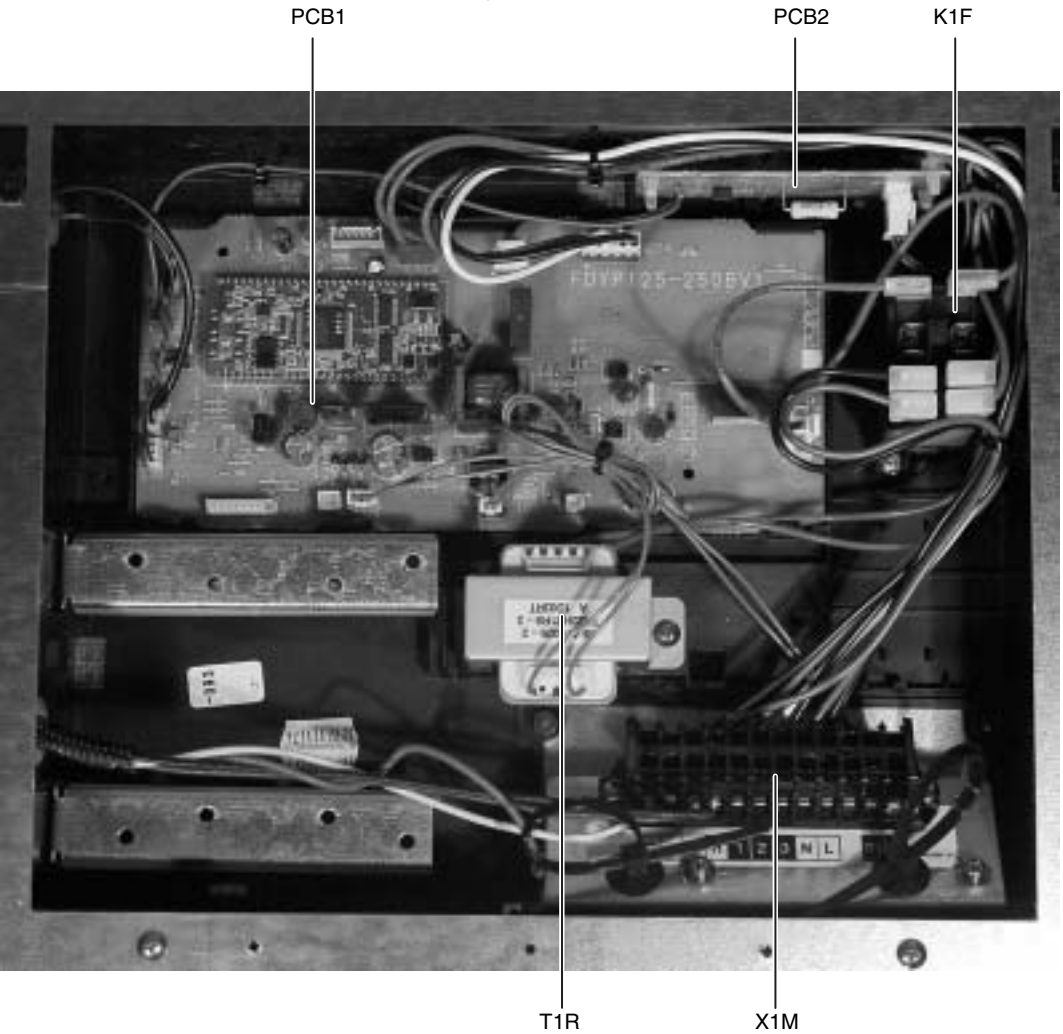
The table below contains the components of the switch box.

| Symbol | Component |
|--------|---|
| PCB1 | Printed circuit board |
| C1R | Fan motor capacitor |
| X2M | Terminal strip (interconnection wiring) |
| X1M | Terminal strip (for remote control P1/P2) |
| T1R | Transformer |

5.15 FDYP125B7V1, FDYP200B7V1 and FDYP250B7V1

Switch box

The illustration below shows the switch box layout.



Components

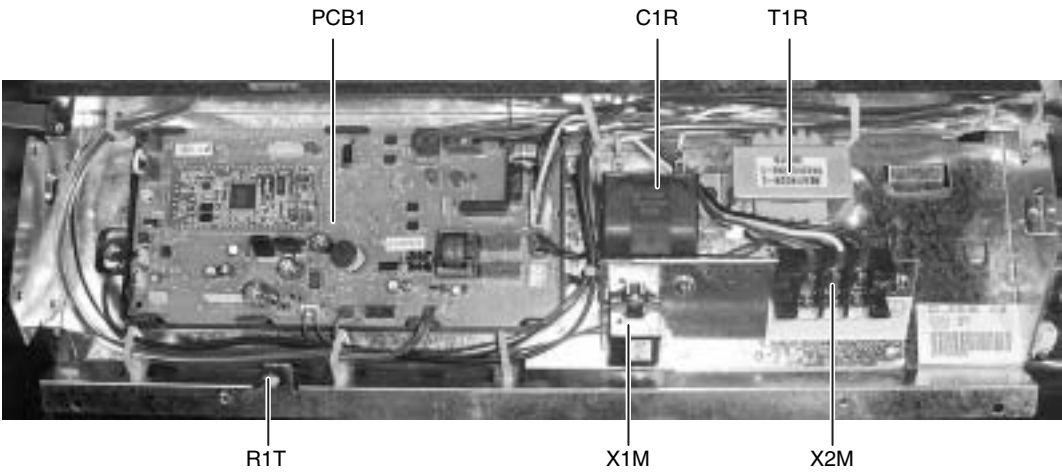
The table below contains the components of the switch box.

| Symbol | Component |
|--------|---------------------------------------|
| PCB1 | Printed circuit board |
| PCB2 | Printed circuit board (interlock PCB) |
| K1F | Magnetic contactor |
| X1M | Terminal strip |
| T1R | Transformer |

5.16 FHYP35BV1, FHYP45BV1, FHYP60BV1, FHYP71BV1, FHYP100BV1 and FHYP125BV1

Switch box

The illustration below shows the switch box layout.



Components

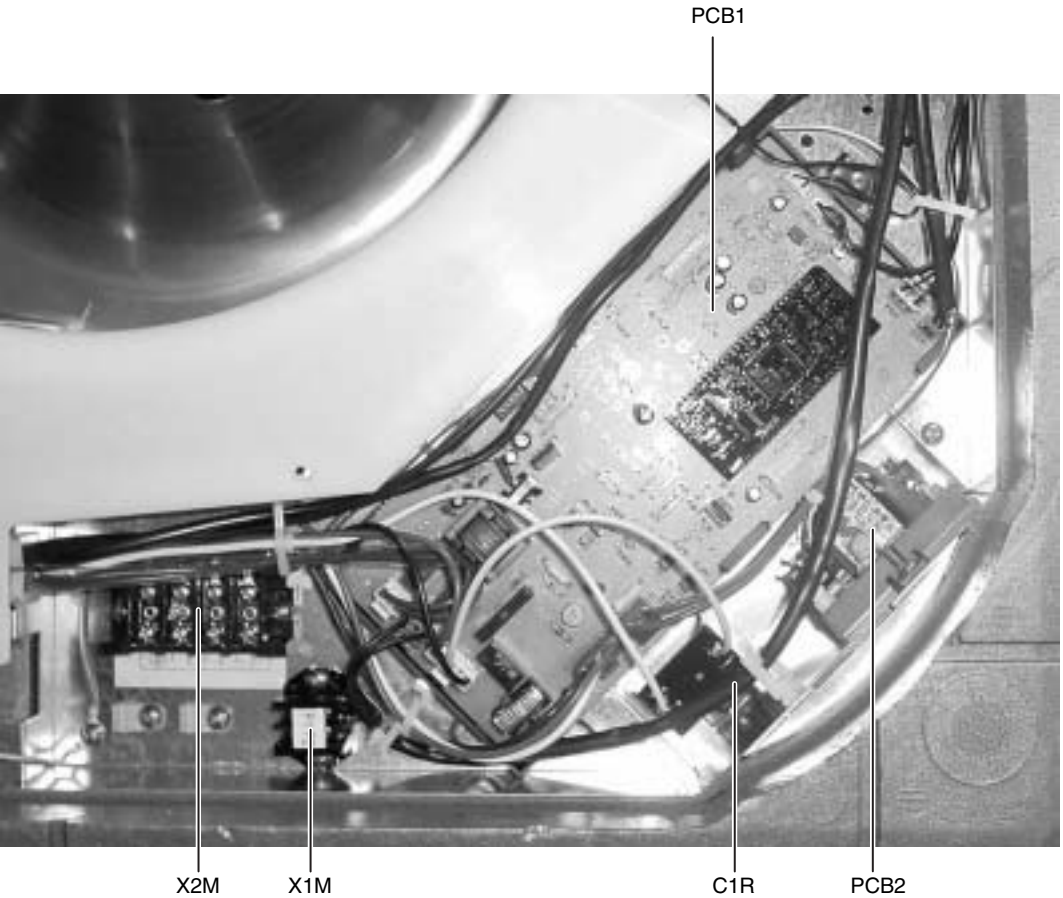
The table below contains the components of the switch box.

| Symbol | Component |
|--------|---|
| PCB1 | Printed circuit board |
| C1R | Fan motor capacitor |
| T1R | Transformer |
| X2M | Terminal strip (interconnection wiring) |
| X1M | Terminal strip (for remote control P1/P2) |
| R1T | Air thermistor |

5.17 FUYP71BV17, FUYP100BV17 and FUYP125BV17

Switch box

The illustration below shows the switch box layout.



Components

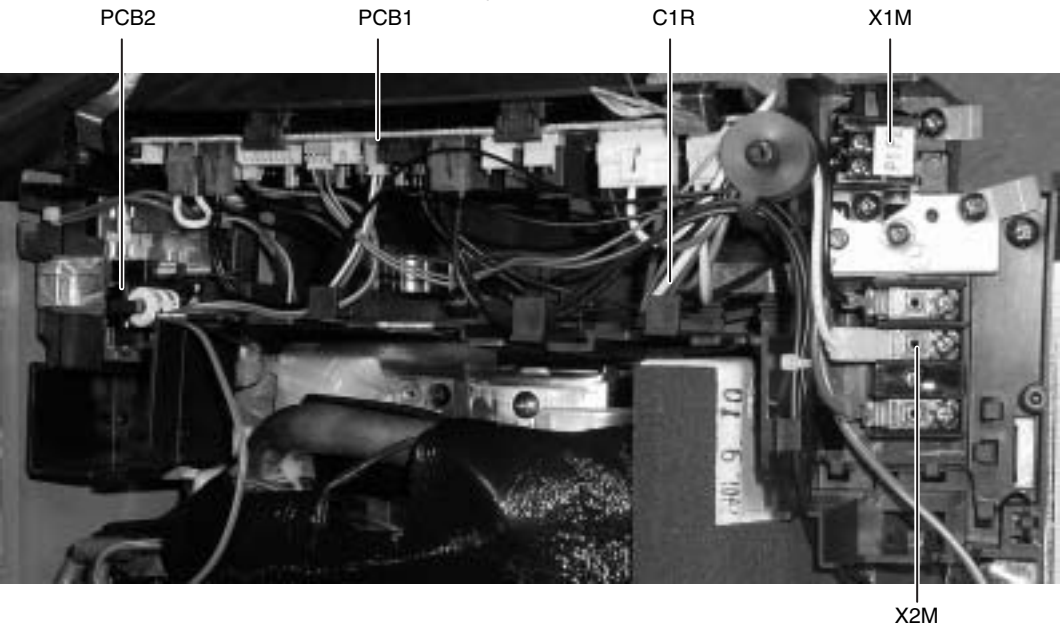
The table below contains the components of the switch box.

| Symbol | Component |
|--------|---|
| PCB1 | Printed circuit board |
| PCB2 | Printed circuit board (power supply PCB) |
| C1R | Fan motor capacitor |
| X1M | Terminal strip (for remote control P1/P2) |
| X2M | Terminal strip (interconnection wiring) |

5.18 FAYP71BV1 and FAYP100BV1

Switch box

The illustration below shows the switch box layout.



Components

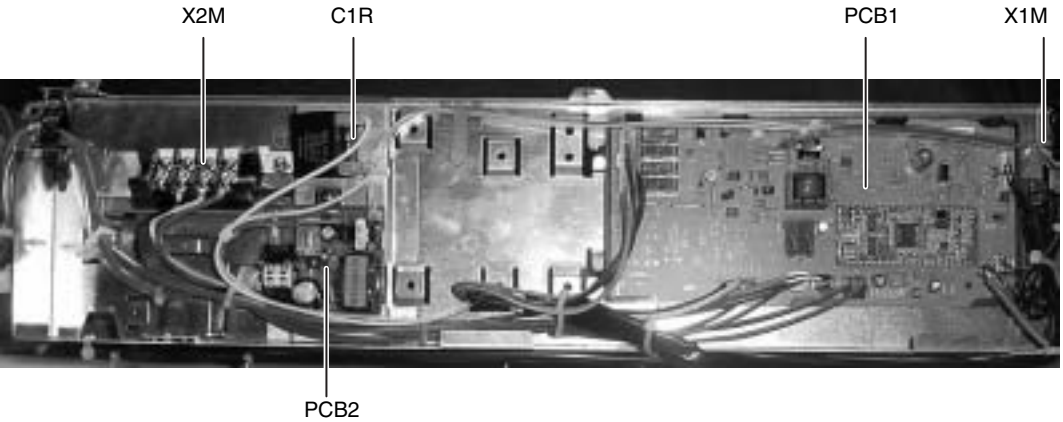
The table below contains the components of the switch box.

| Symbol | Component |
|--------|---|
| PCB1 | Printed circuit board |
| PCB2 | Printed circuit board |
| C1R | Fan motor capacitor |
| X1M | Terminal strip (for remote control P1/P2) |
| X2M | Terminal strip (for interconnection wiring) |

5.19 FHYKP35BV1, FHYKP45BV1, FHYKP60BV1 and FHYKP71BV1

Switch box

The illustration below shows the switch box layout.



Components

The table below contains the components of the switch box.

| Symbol | Component |
|--------|---|
| X2M | Terminal strip (interconnection wiring) |
| C1R | Fan motor capacitor |
| PCB1 | Printed circuit board |
| X1M | Terminal strip (for remote control P1/P2) |
| PCB2 | Printed circuit board (power supply PCB) |

1

6 Wiring Diagrams: Outdoor Units

6.1 What Is in This Chapter?

Introduction

This chapter contains the wiring diagrams of the outdoor units.

Wiring diagrams

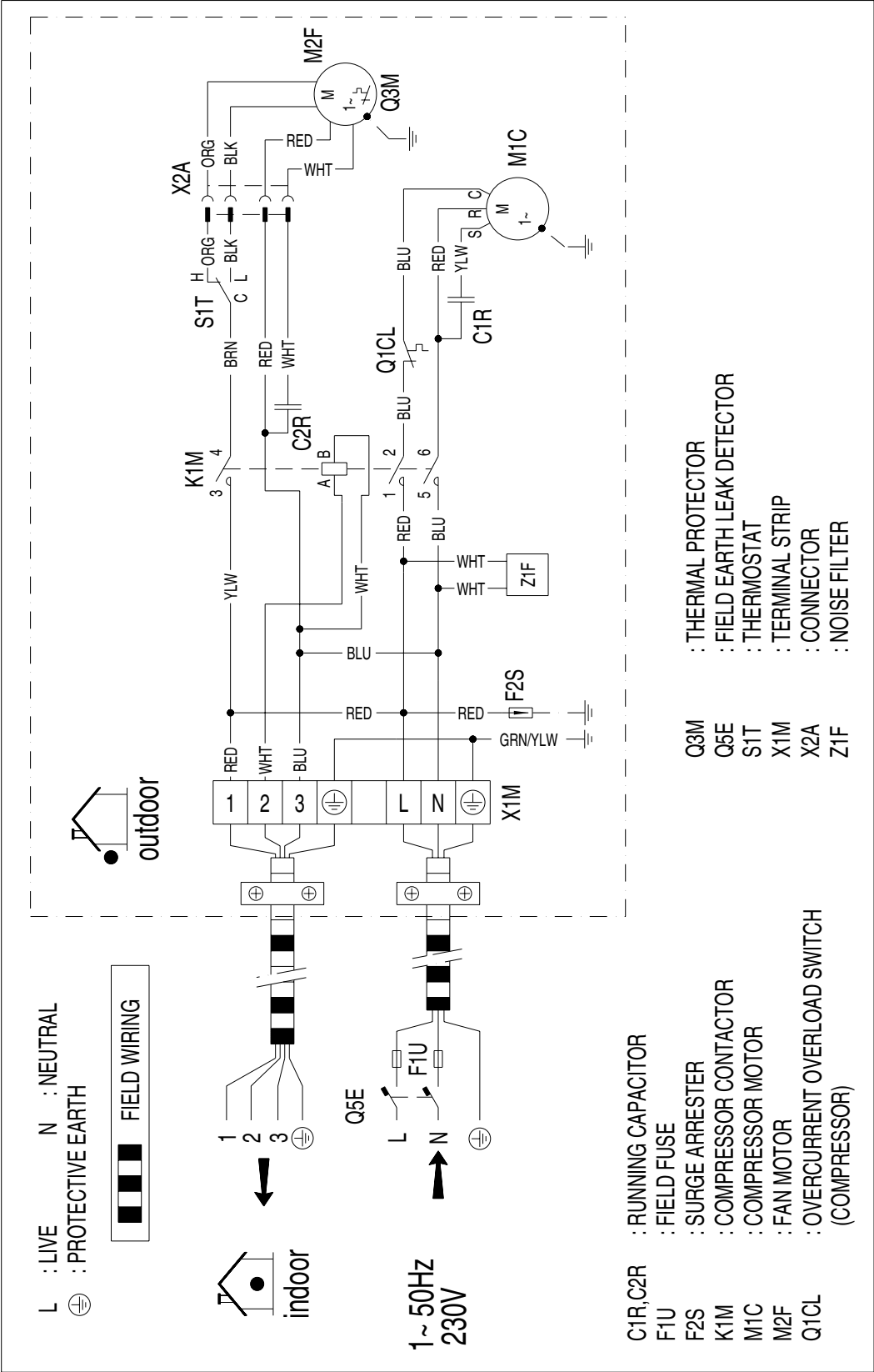
This chapter contains the following wiring diagrams:

| Wiring diagram | See page |
|--------------------------------|----------|
| 6.2-R35GZ7V11 | 1-116 |
| 6.3-R45GZ7V11 | 1-117 |
| 6.4-R45GZ7W11 | 1-118 |
| 6.5-R60GZ7W11 | 1-119 |
| 6.6-MA56GZ7W11 | 1-120 |
| 6.7-MA90GZ7W11 | 1-121 |
| 6.8-RP71B7V1 | 1-122 |
| 6.9-RP71B7W1 | 1-123 |
| 6.10-RP71B7T1 | 1-124 |
| 6.11-RP100B7V1 | 1-125 |
| 6.12-RP100B7W1 and RP125B7W1 | 1-126 |
| 6.13-RP100B7T1 and RP125B7T1 | 1-127 |
| 6.14-RP200B7W1 and RP250B7W1 | 1-128 |
| 6.15-RY35EAZ7V1 and RY45EAZ7V1 | 1-129 |
| 6.16-RYP71B7V1 | 1-130 |
| 6.17-RYP71B7W1 | 1-131 |
| 6.18-RYP100B7V1 | 1-132 |
| 6.19-RYP100B7W1 and RYP125B7W1 | 1-133 |
| 6.20-RYP200B7W1 and RYP250B7W1 | 1-134 |

6.2 R35GZ7V11

Wiring diagram

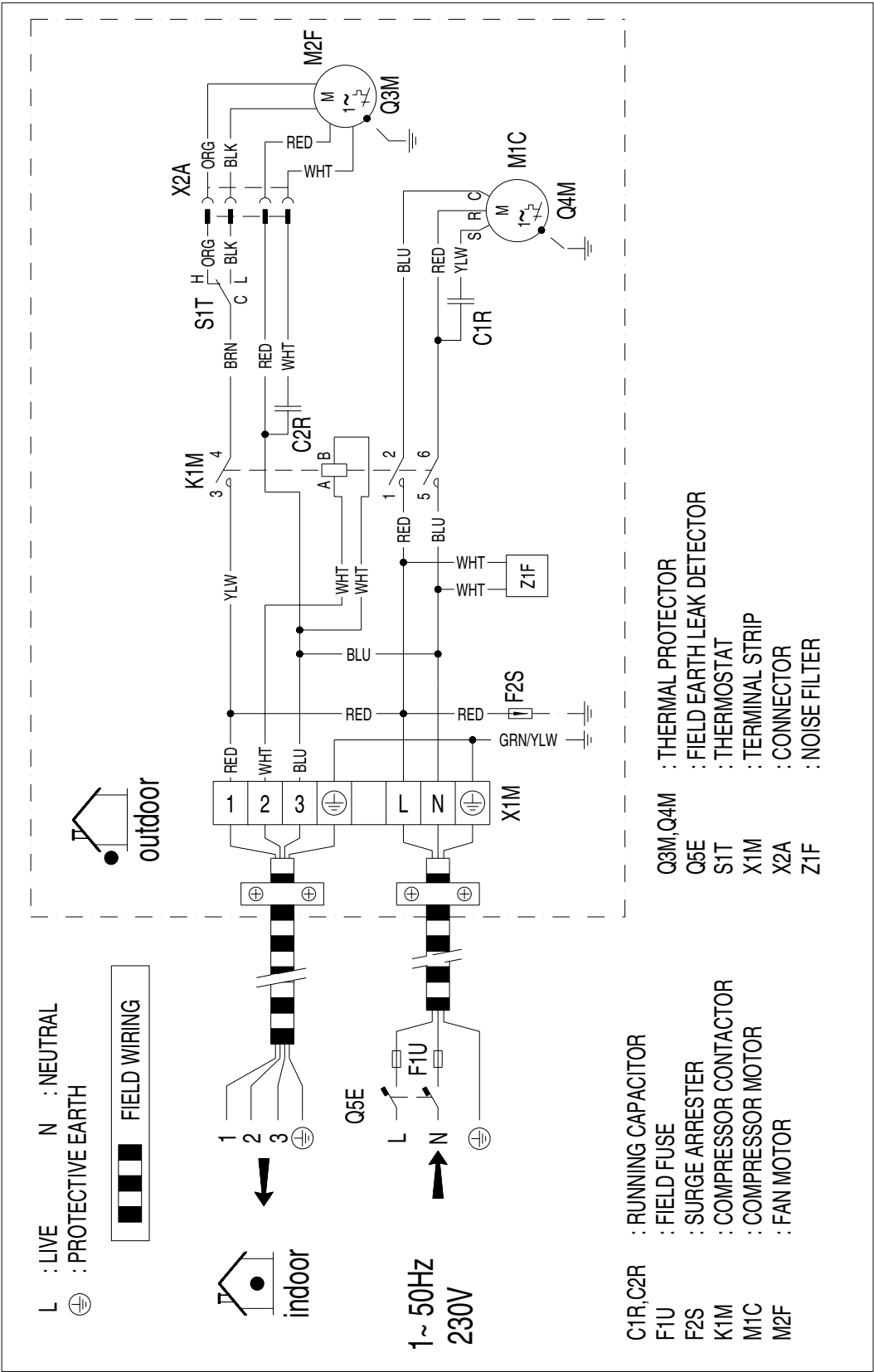
The illustration below shows the wiring diagram of the unit.



6.3 R45GZ7V11

Wiring diagram

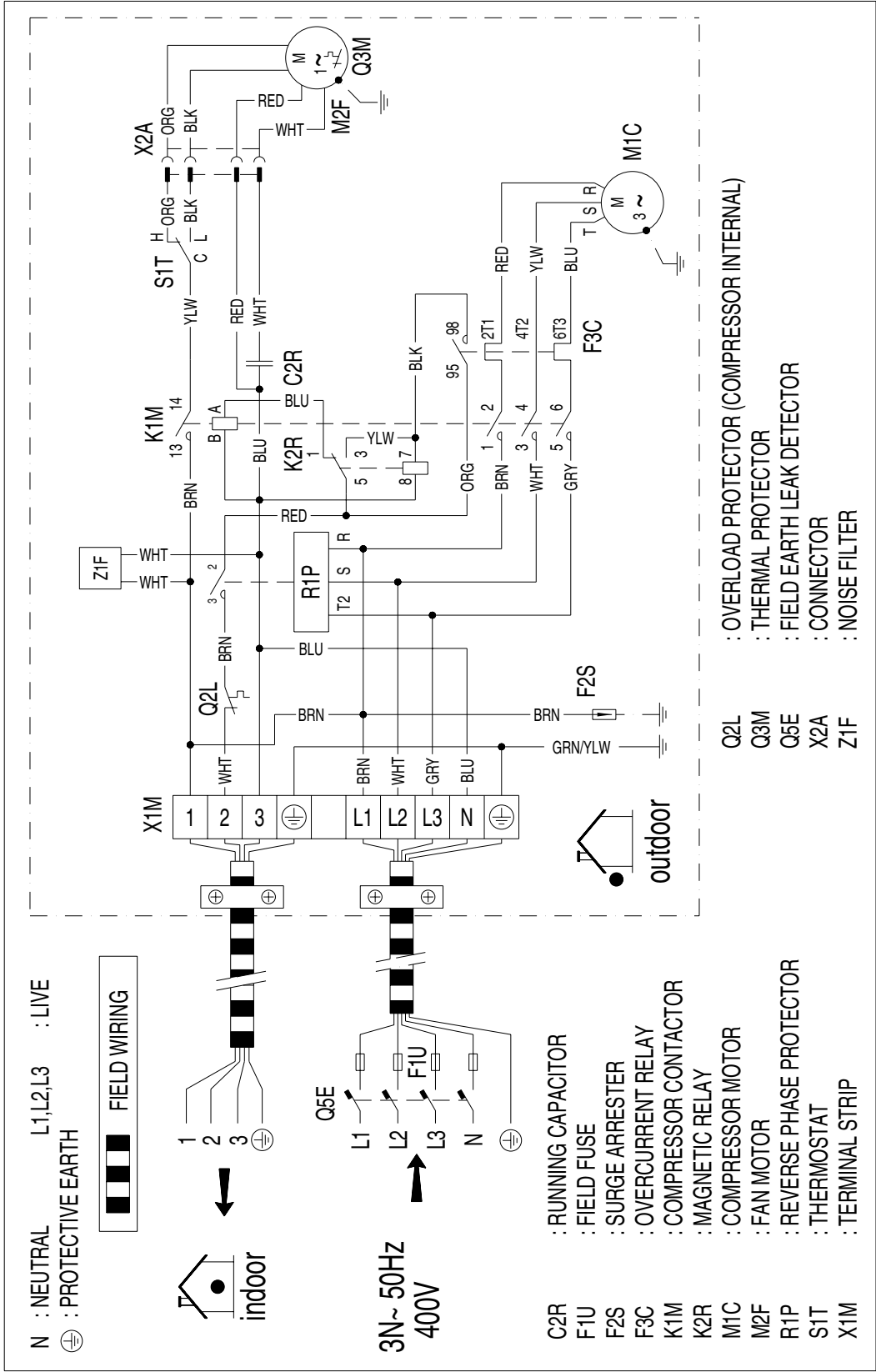
The illustration below shows the wiring diagram of the unit.



6.4 R45GZ7W11

Wiring diagram

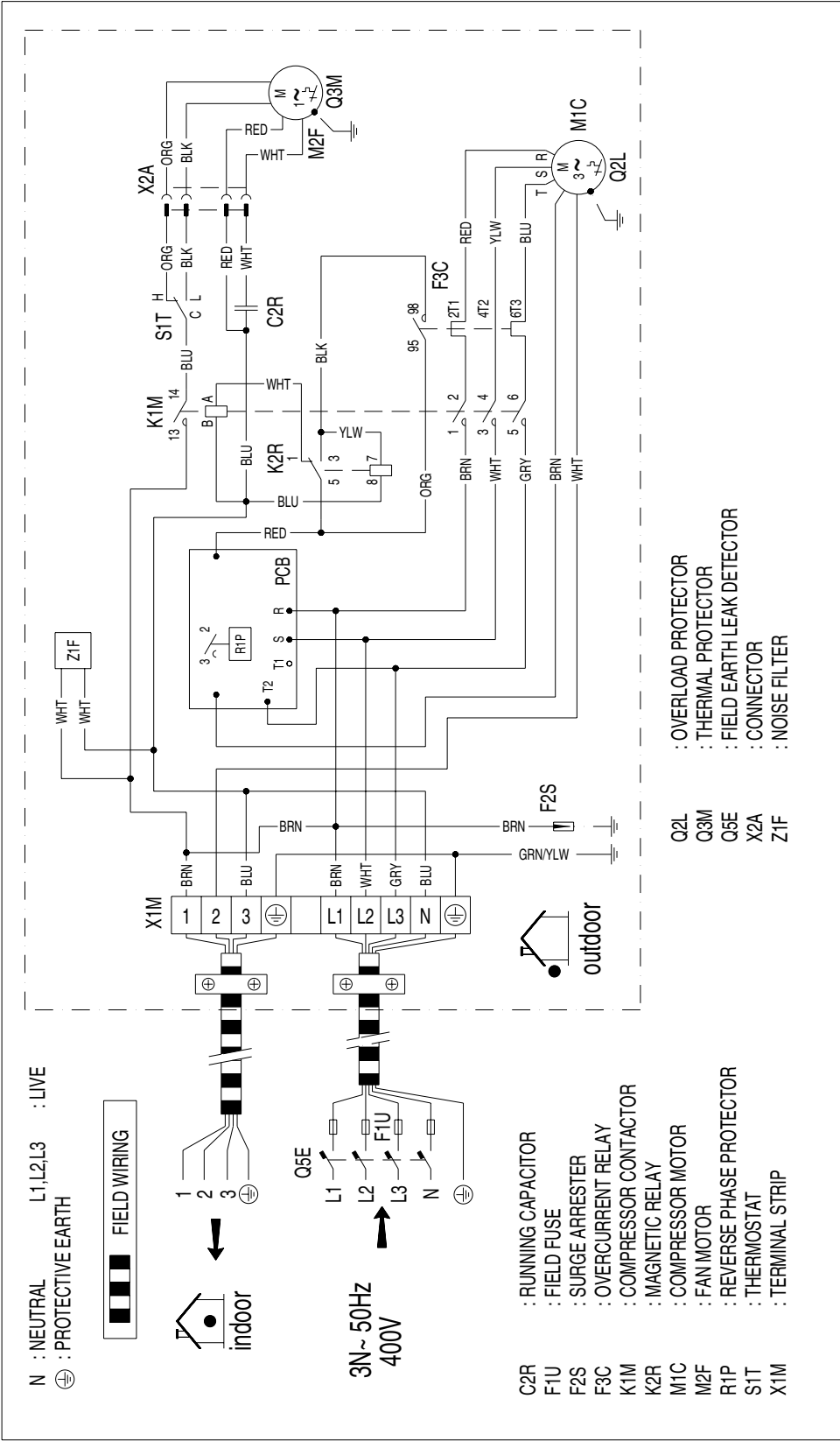
The illustration below shows the wiring diagram of the unit.



6.5 R60GZ7W11

Wiring diagram

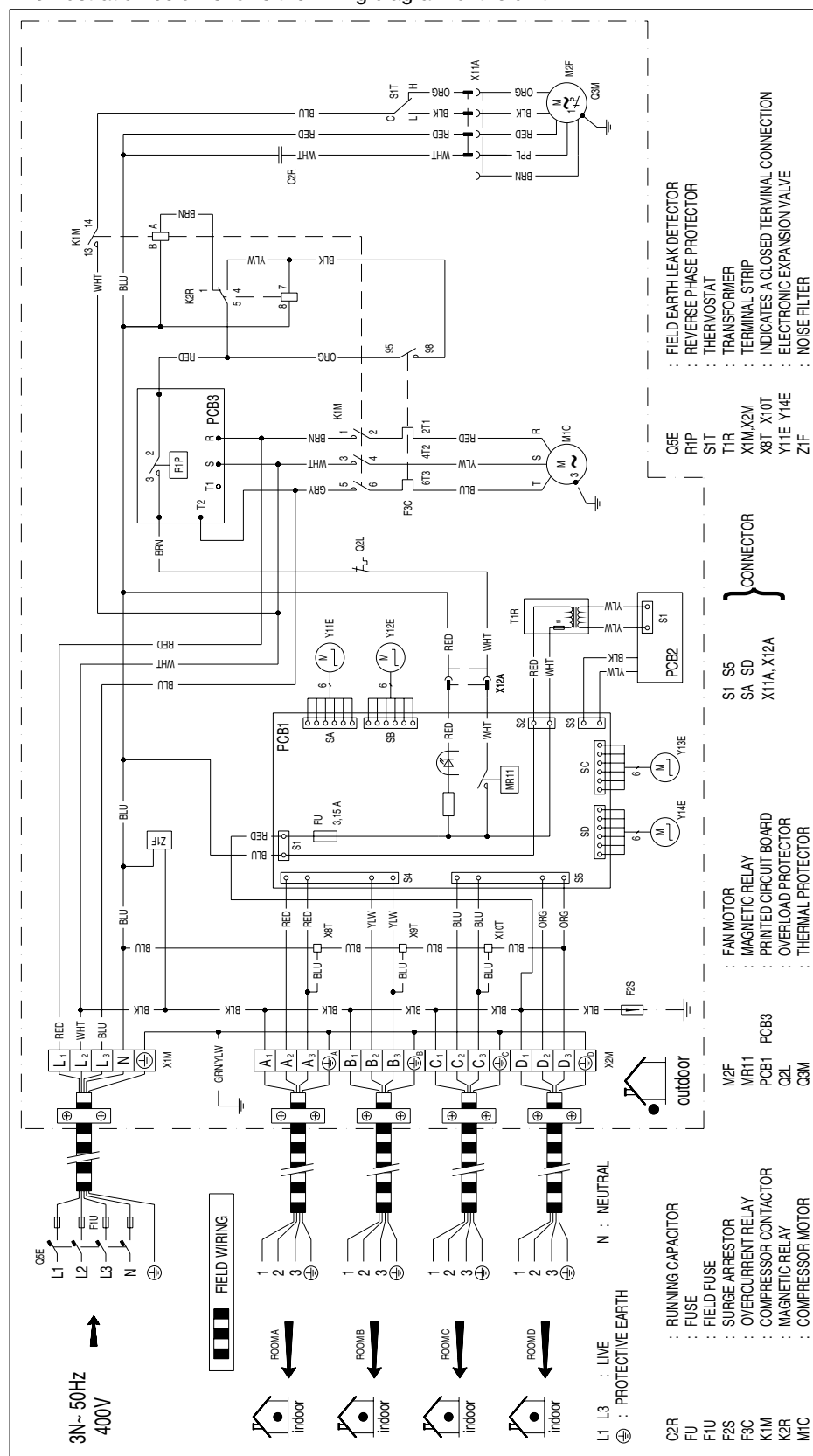
The illustration below shows the wiring diagram of the unit.



6.6 MA56GZ7W11

Wiring diagram

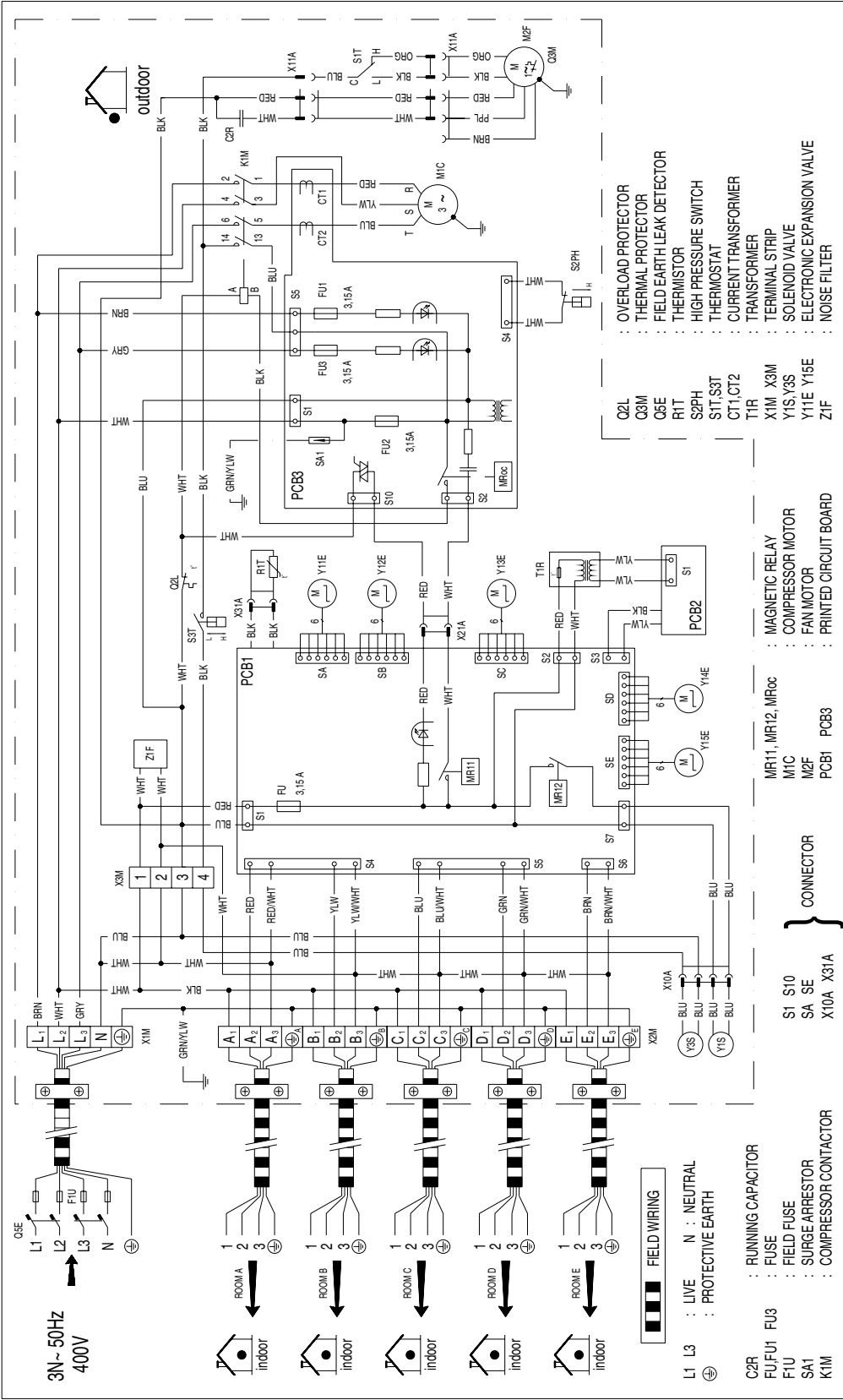
The illustration below shows the wiring diagram of the unit.



6.7 MA90GZ7W11

Wiring diagram

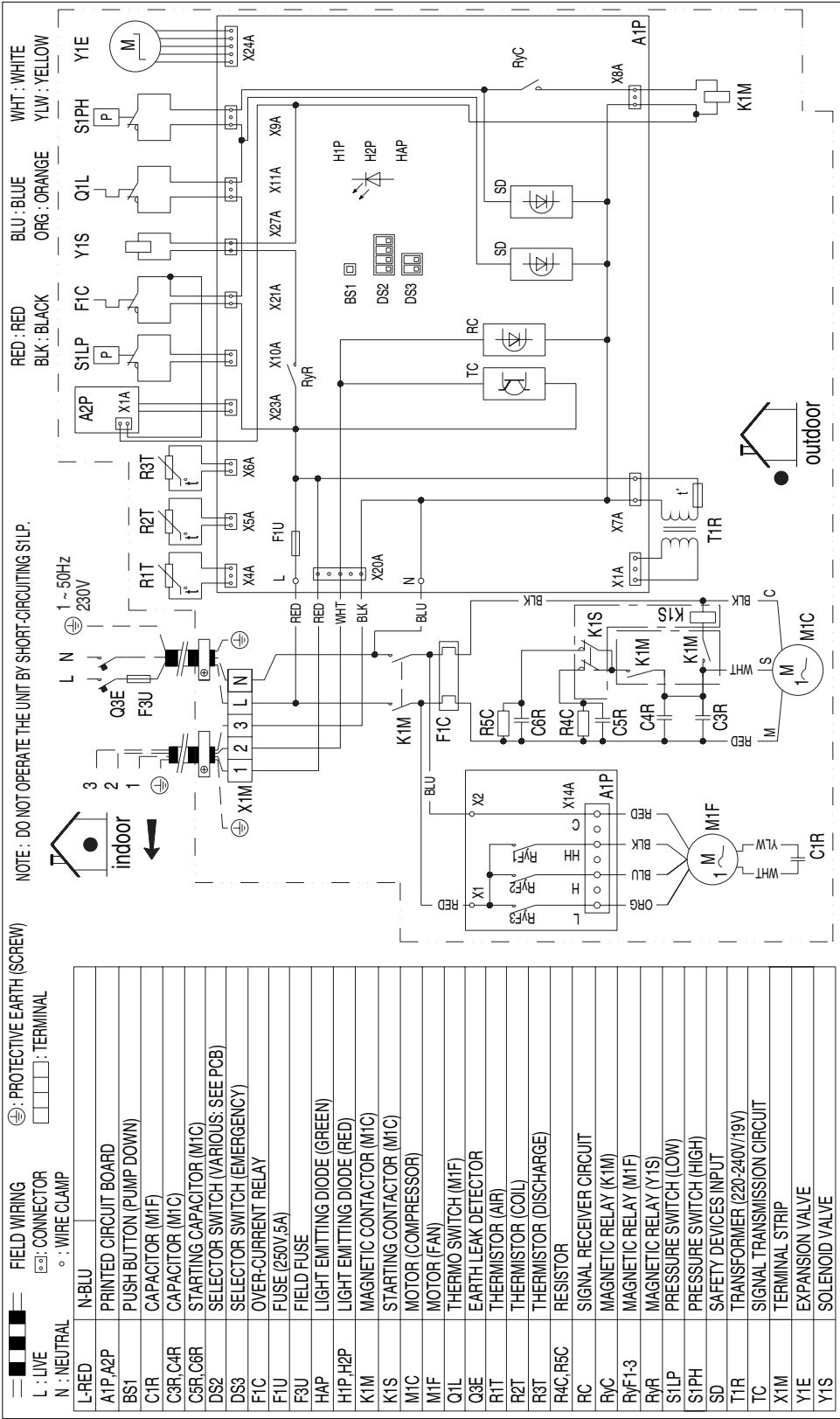
The illustration below shows the wiring diagram of the unit.



6.8 RP71B7V1

Wiring diagram

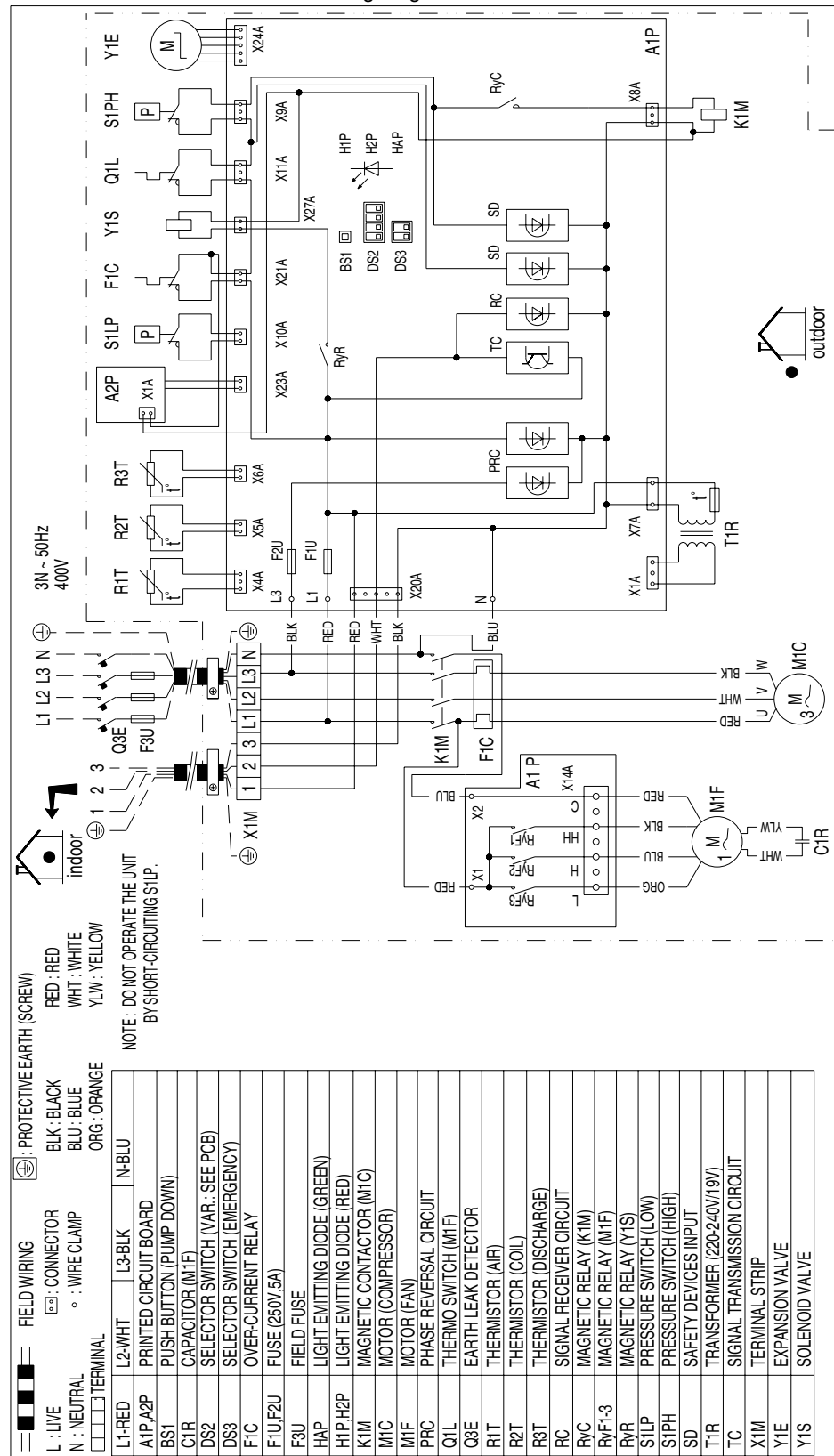
The illustration below shows the wiring diagram of the unit.



6.9 RP71B7W1

Wiring diagram

The illustration below shows the wiring diagram of the unit.

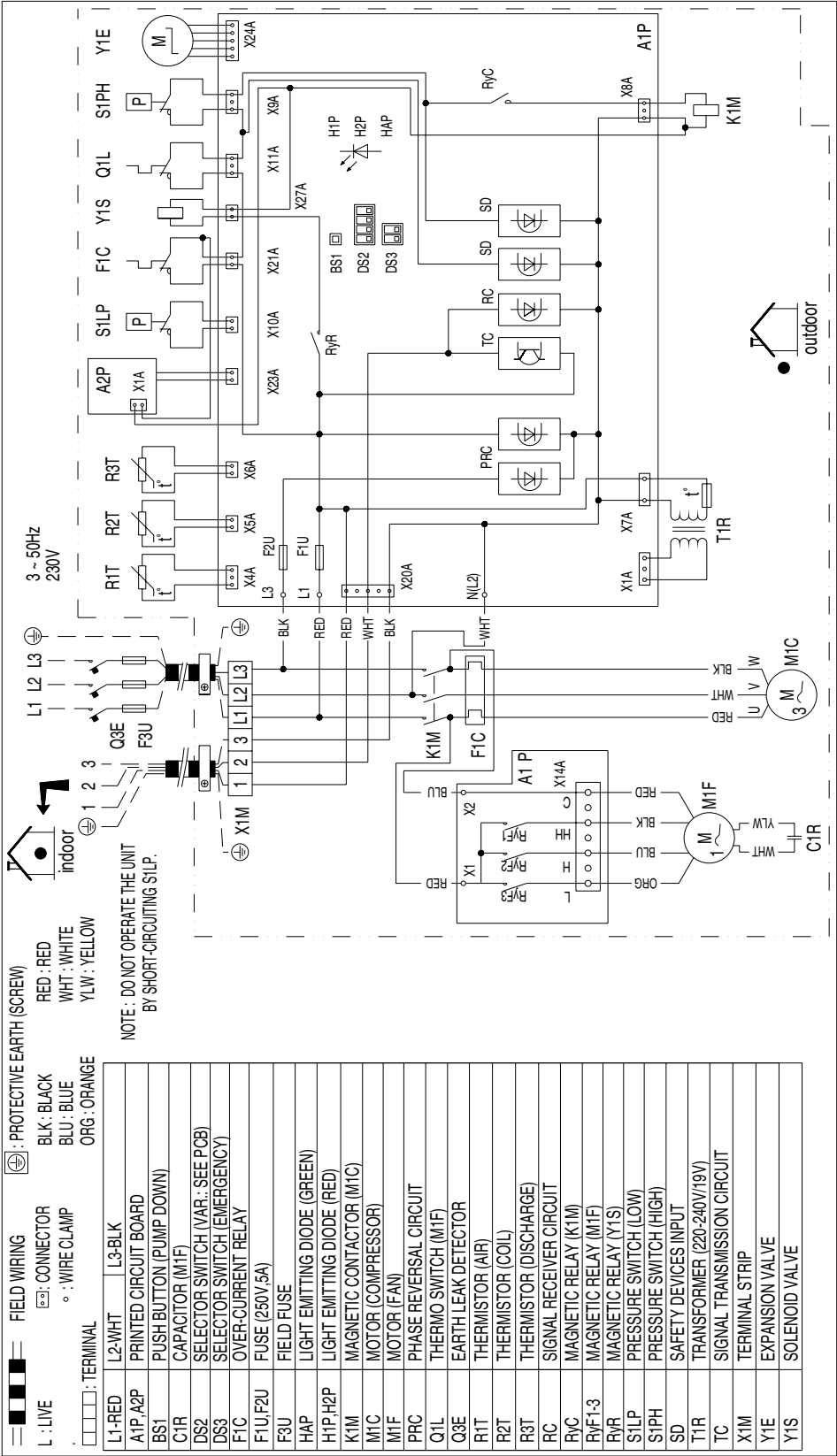


6.10

RP71B7T1

Wiring diagram

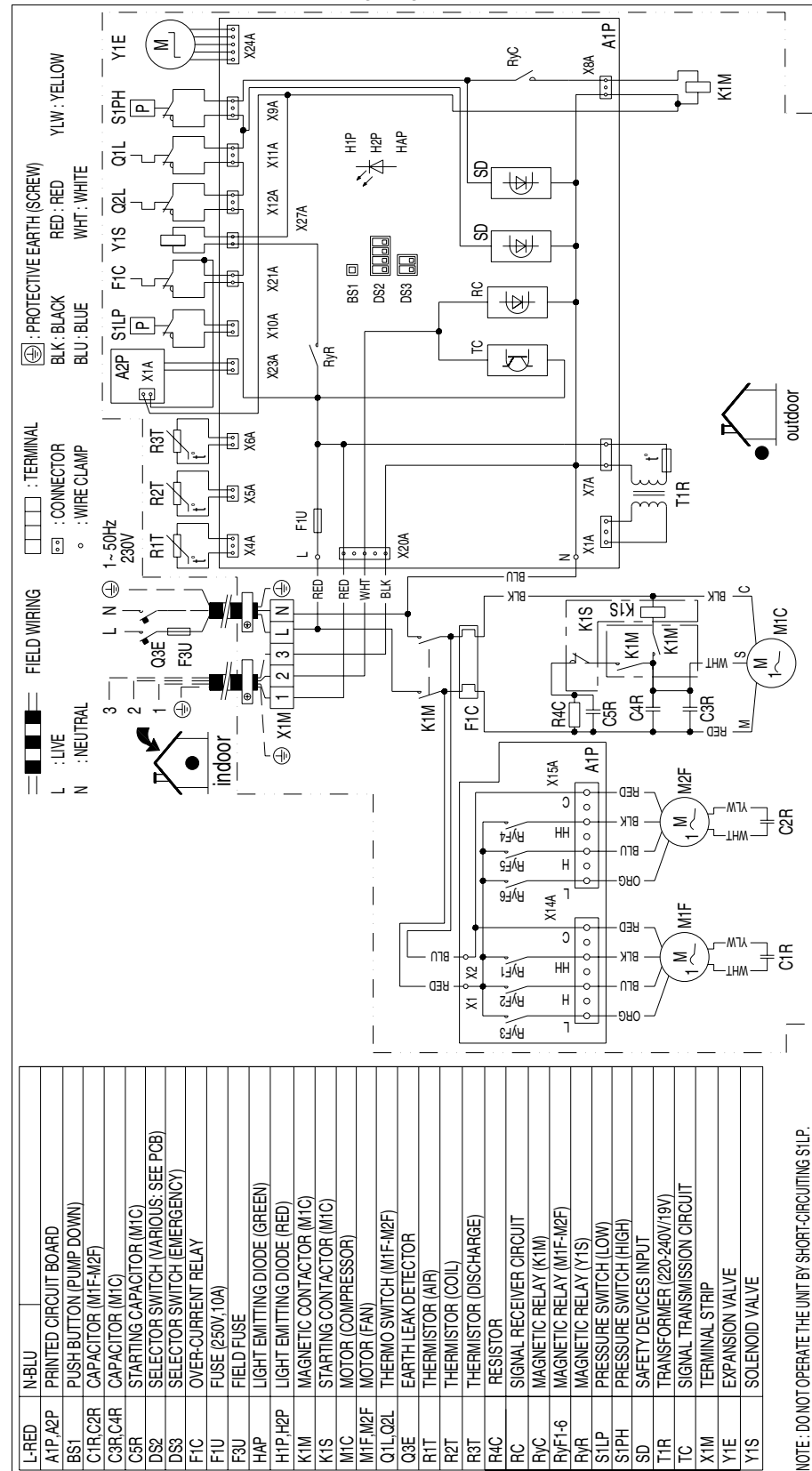
The illustration below shows the wiring diagram of the unit.



6.11 RP100B7V1

Wiring diagram

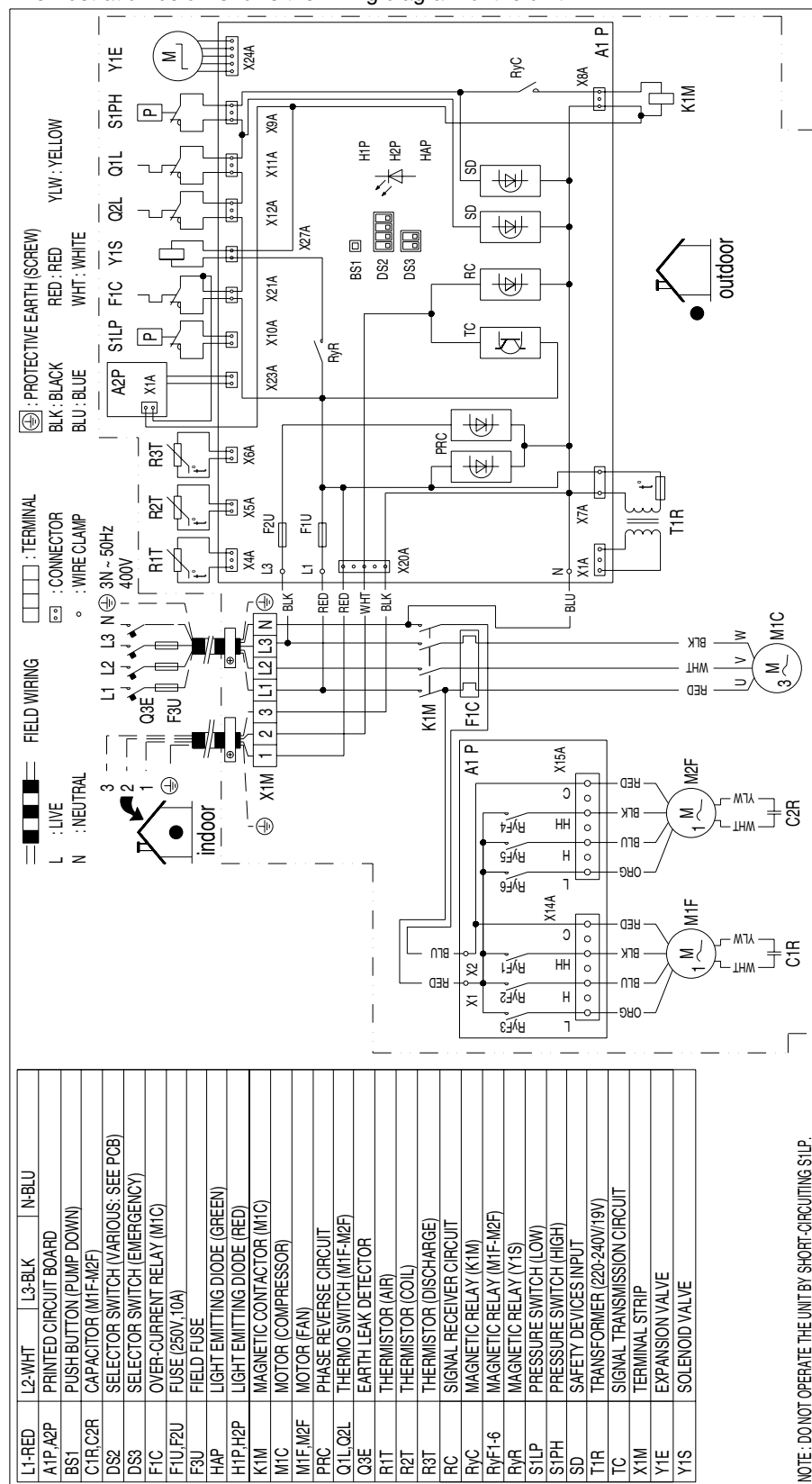
The illustration below shows the wiring diagram of the unit.



NOTE: DO NOT OPERATE THE UNIT BY SHORT-CIRCUITING S1LP.

1

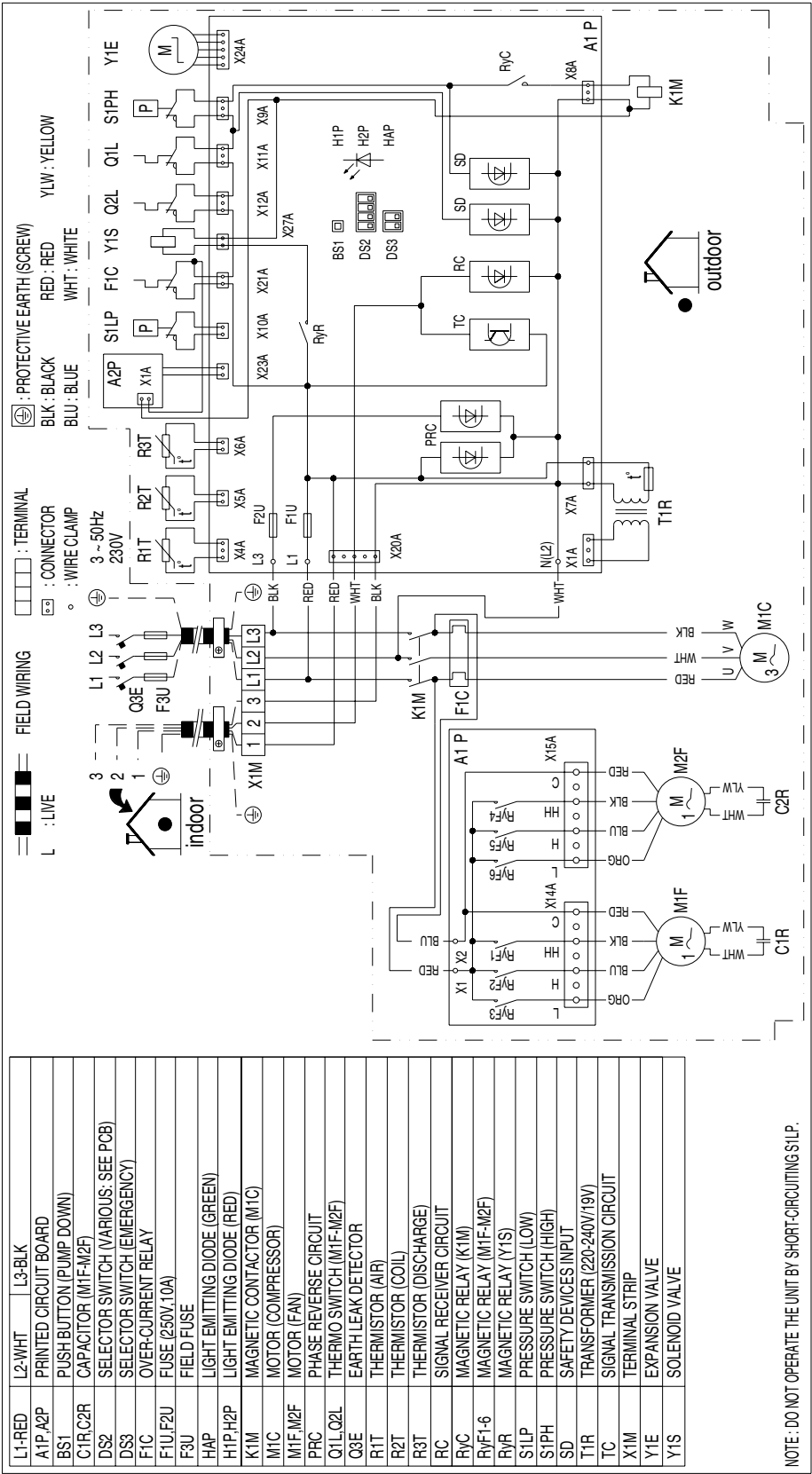
The illustration below shows the wiring diagram of the unit.



6.13 RP100B7T1and RP125B7T1

Wiring diagram

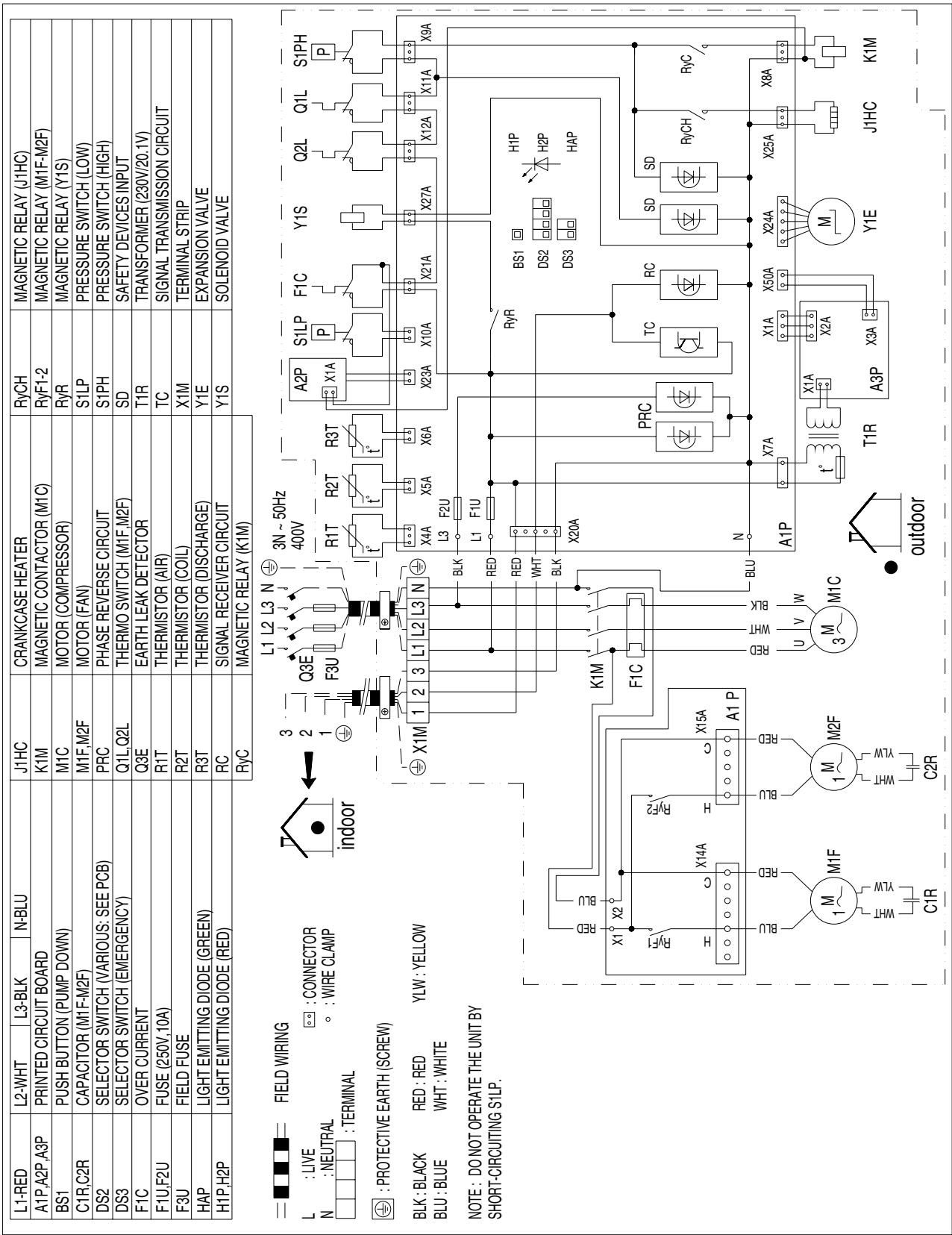
The illustration below shows the wiring diagram of the unit.



6.14 RP200B7W1 and RP250B7W1

Wiring diagram

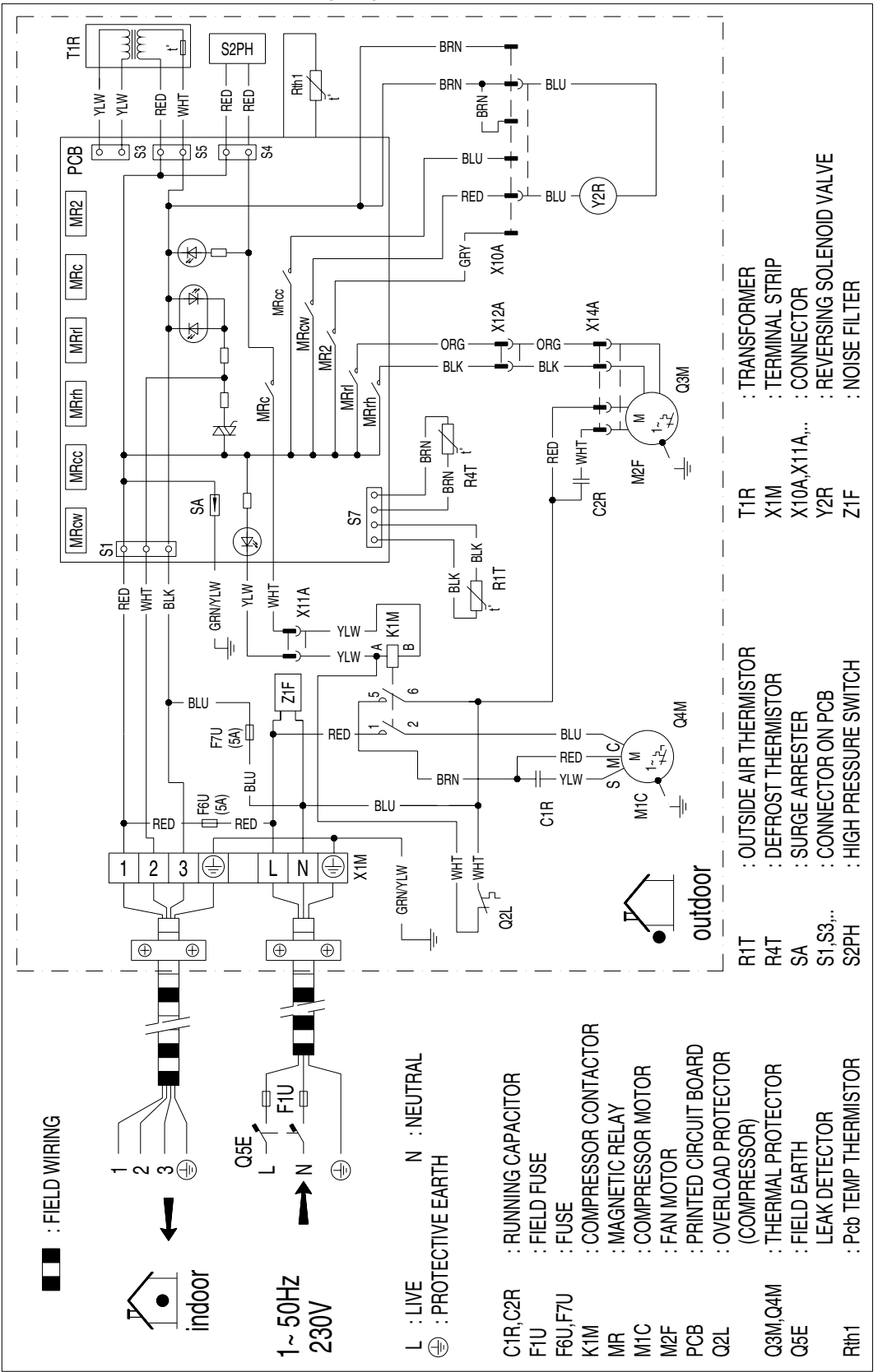
The illustration below shows the wiring diagram of the unit.



6.15 RY35EAZ7V1 and RY45EAZ7V1

Wiring diagram

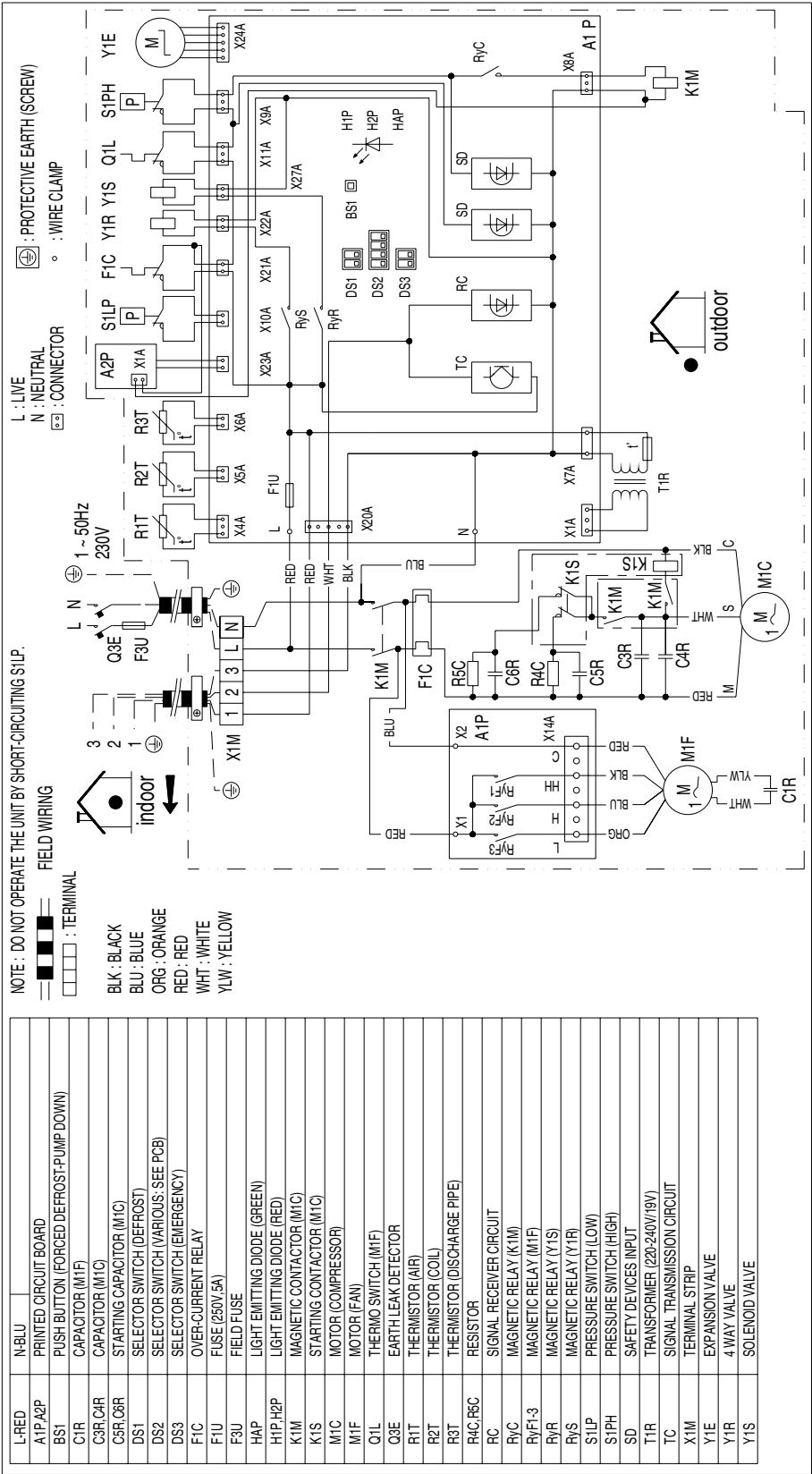
The illustration below shows the wiring diagram of the unit.



6.16 RYP71B7V1

Wiring diagram

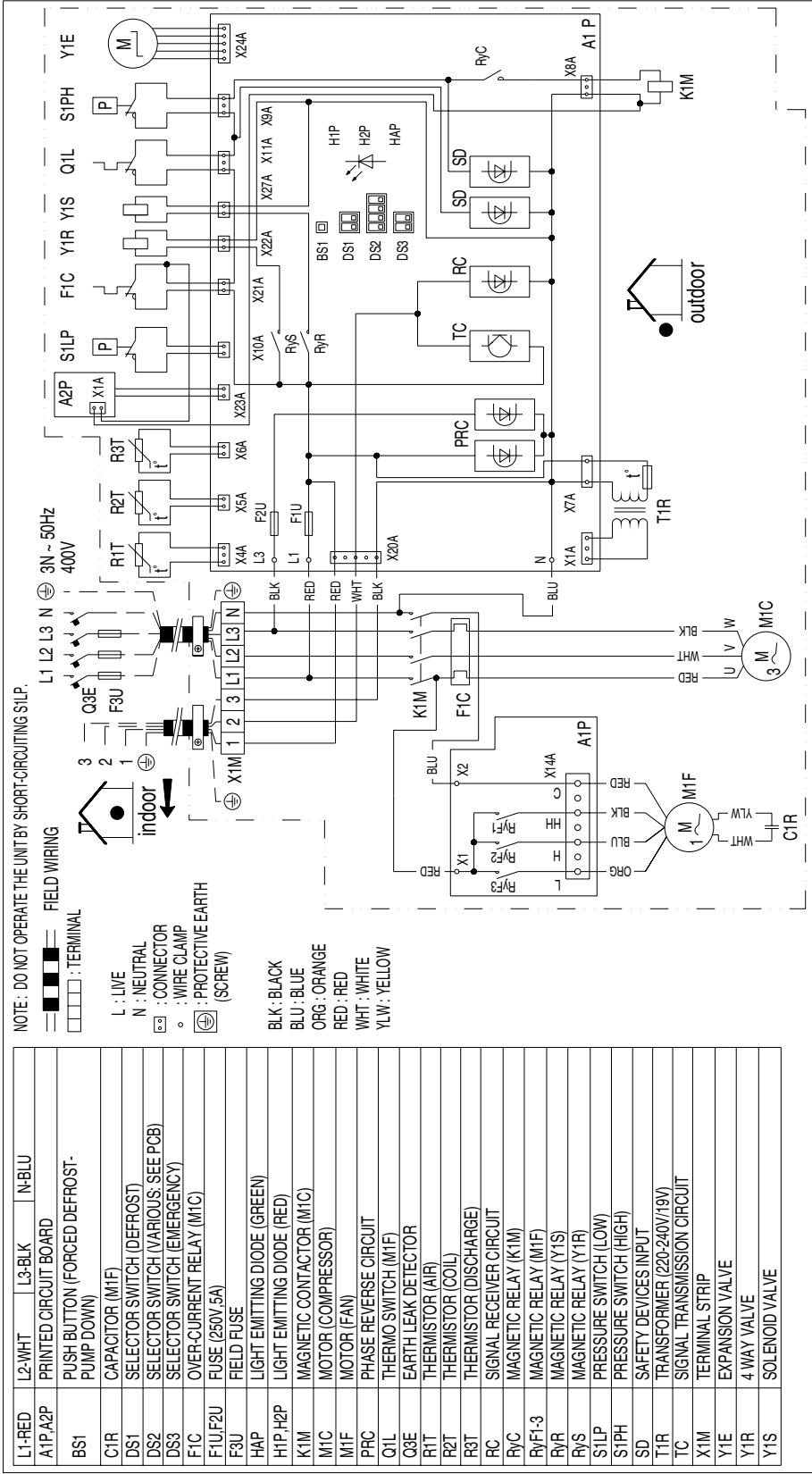
The illustration below shows the wiring diagram of the unit.



6.17 RYP71B7W1

Wiring diagram

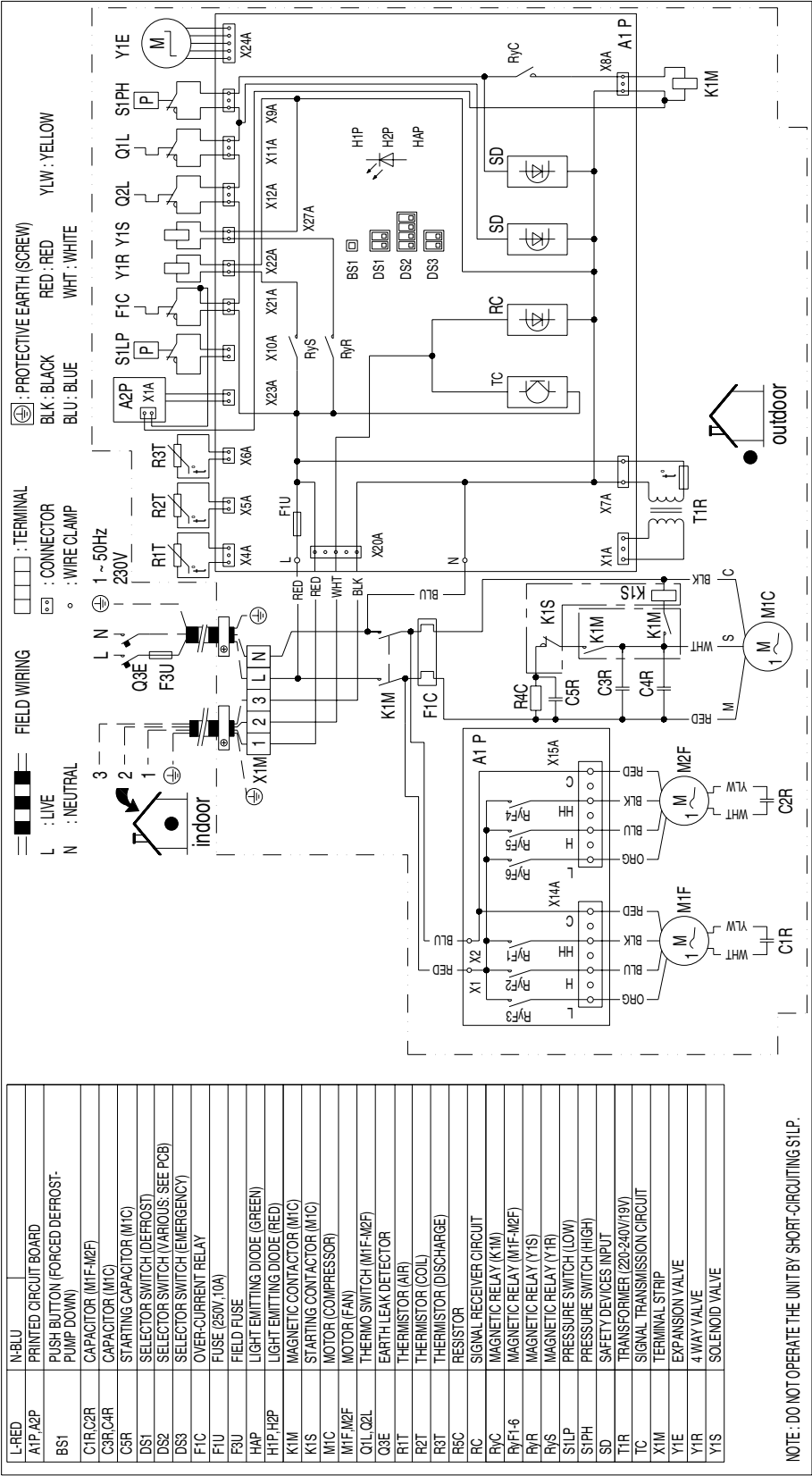
The illustration below shows the wiring diagram of the unit.



6.18 RYP100B7V1

Wiring diagram

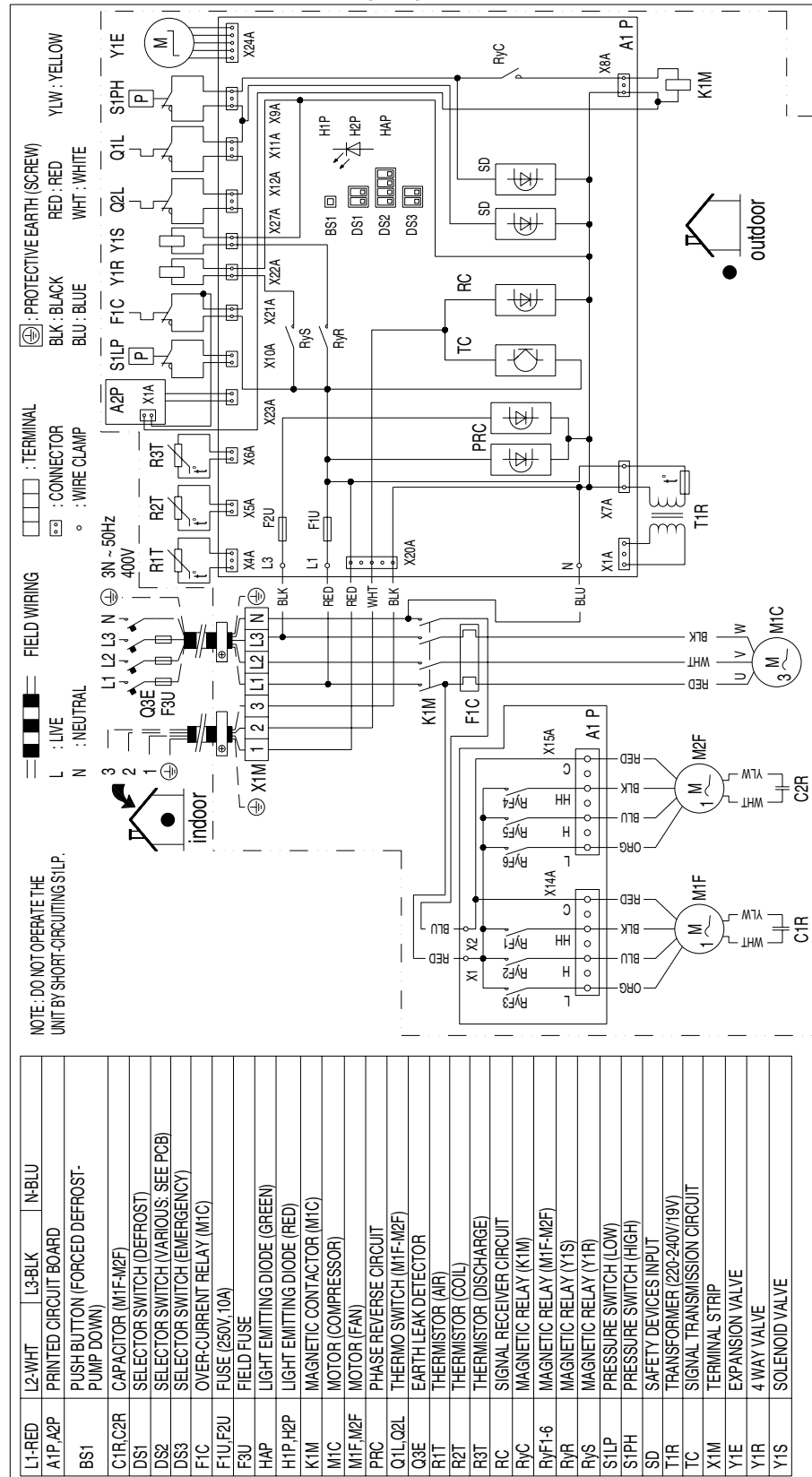
The illustration below shows the wiring diagram of the unit.



6.19 RYP100B7W1 and RYP125B7W1

Wiring diagram

The illustration below shows the wiring diagram of the unit.

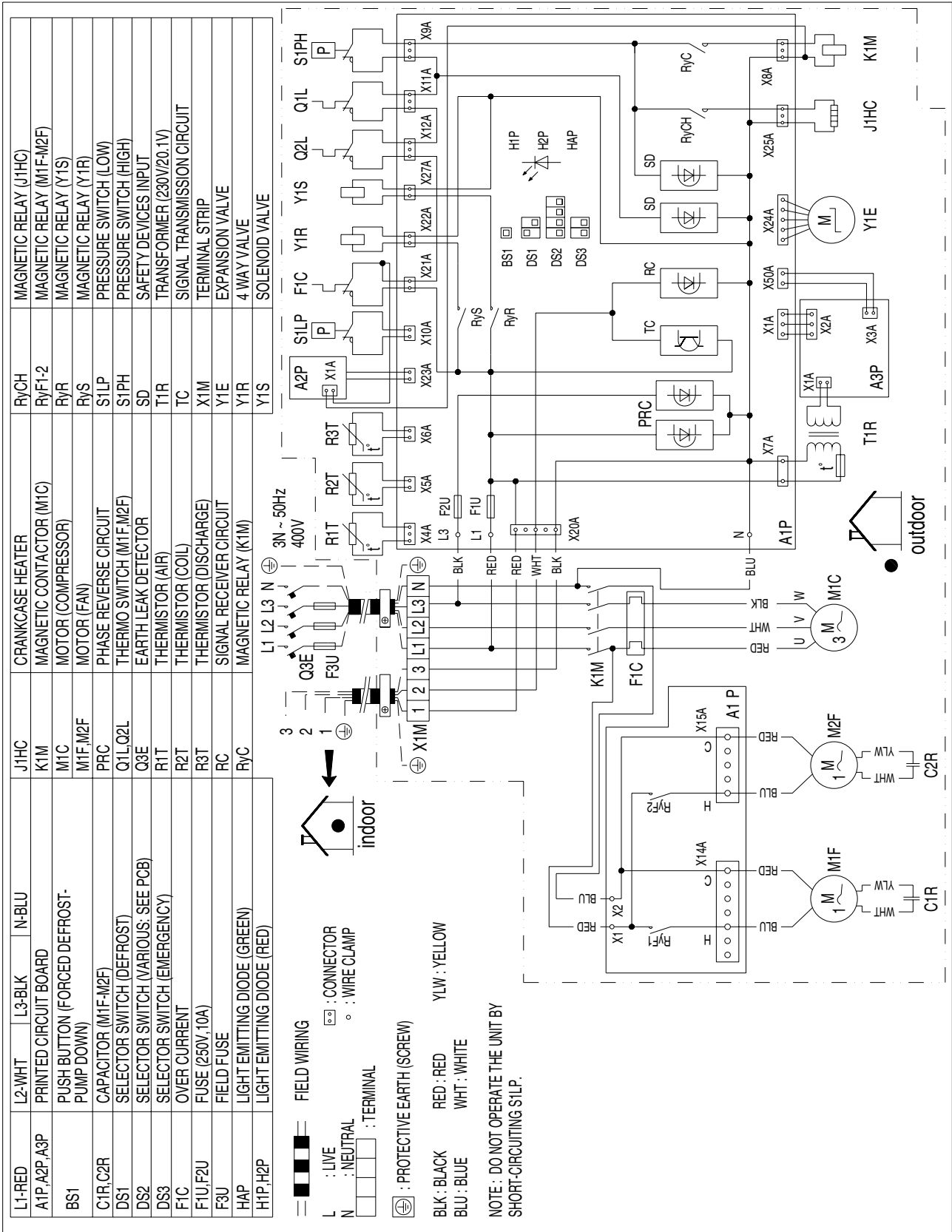


6.20

RYP200B7W1 and RYP250B7W1

Wiring diagram

The illustration below shows the wiring diagram of the unit.



7 Wiring Diagrams: Indoor Units

7.1 What Is in This Chapter?

Introduction

This chapter contains the wiring diagrams of the indoor units.

Wiring diagrams

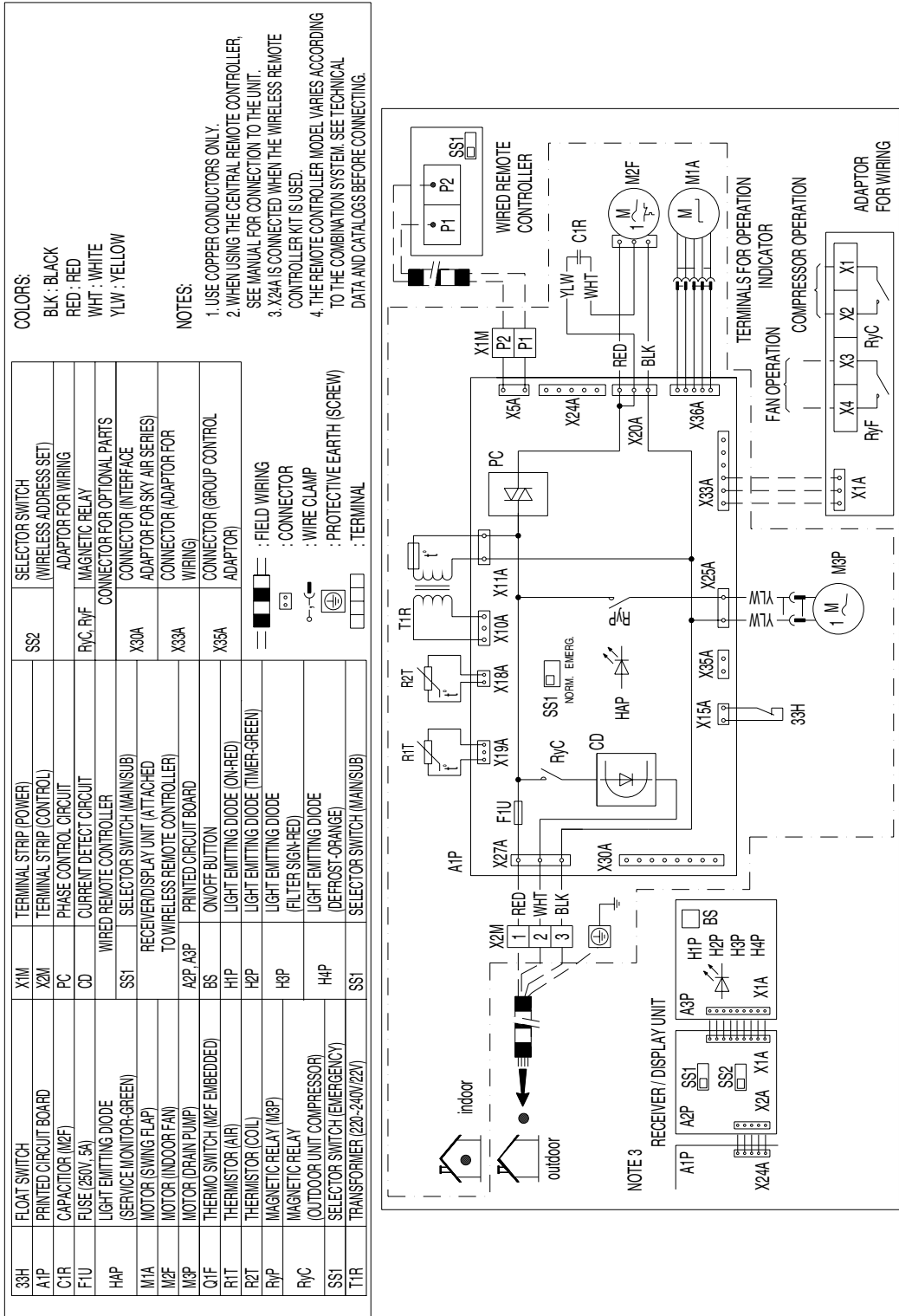
This chapter contains the following wiring diagrams:

| Wiring diagram | See page |
|---|----------|
| 7.2–FHC35BZ7V1, FHC45BZ7V1 and FHC60BZ7V1 | 1–136 |
| 7.3–FHYBP35B7V1, FHYBP45B7V1, FHYBP60B7V1 and FHYBP71B7V1 | 1–137 |
| 7.4–FHYBP100B7V1 and FHYBP125B7V1 | 1–138 |
| 7.5–FHYC35BZ7V1, FHYC45BZ7V1, FHYCP35BZ7V1, FHYCP45BZ7V1, FHYCP60BZ7V1, FHYCP71BZ7V1, FHYCP100BZ7V1 and FHYCP125BZ7V1 | 1–139 |
| 7.6–FDYP125B7V1, FDYP200B7V1 and FDYP250B7V1 | 1–140 |
| 7.7–FHYP35BV1, FHYP45BV1, FHYP60BV1, FHYP71BV1, FHYP100BV1 and FHYP125BV1 | 1–141 |
| 7.8–FUYP71BV17, FUYP100BV17 and FUYP125BV17 | 1–142 |
| 7.9–FAYP71BV1 and FAYP100BV1 | 1–143 |
| 7.10–FHYKP35BV1, FHYKP45BV1, FHYKP60BV1 and FHYKP71BV1 | 1–144 |

7.2 FHC35BZ7V1, FHC45BZ7V1 and FHC60BZ7V1

Wiring diagram

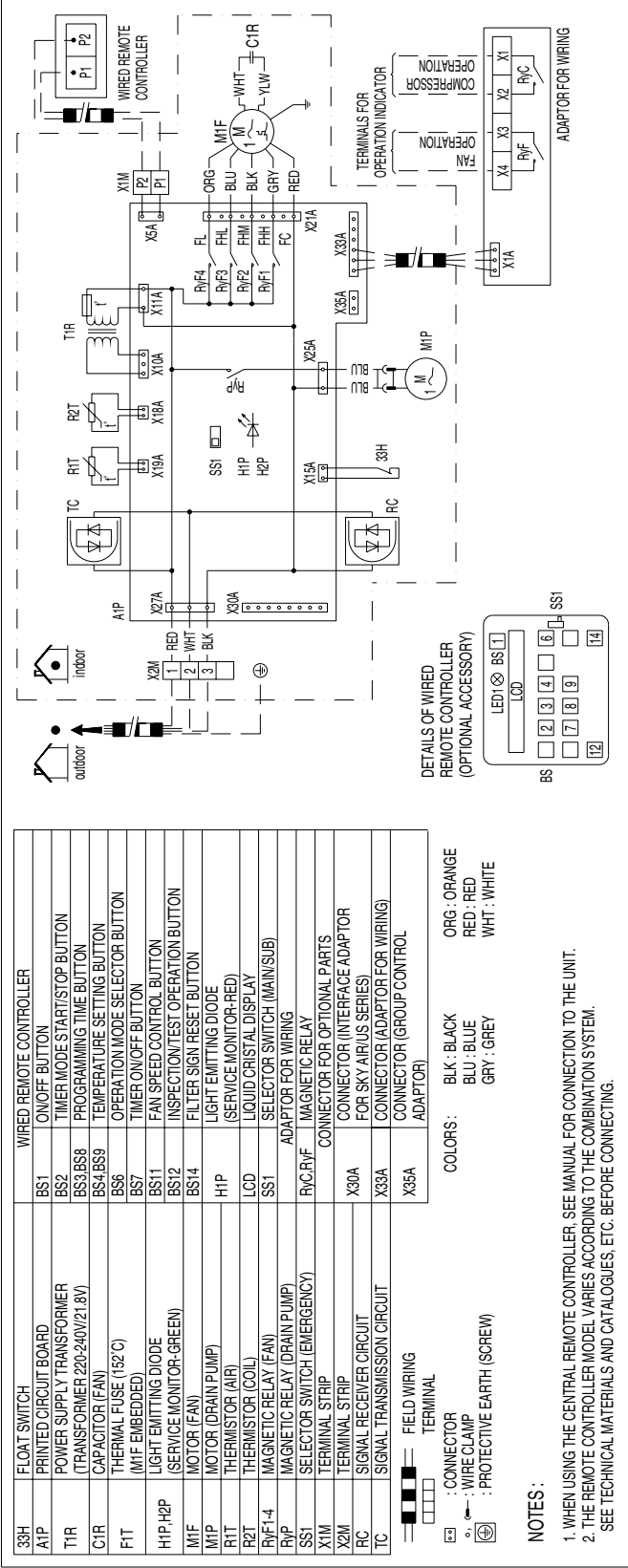
The illustration below shows the wiring diagram of the unit.



7.3 FHYBP35B7V1, FHYBP45B7V1, FHYBP60B7V1 and FHYBP71B7V1

Wiring diagram

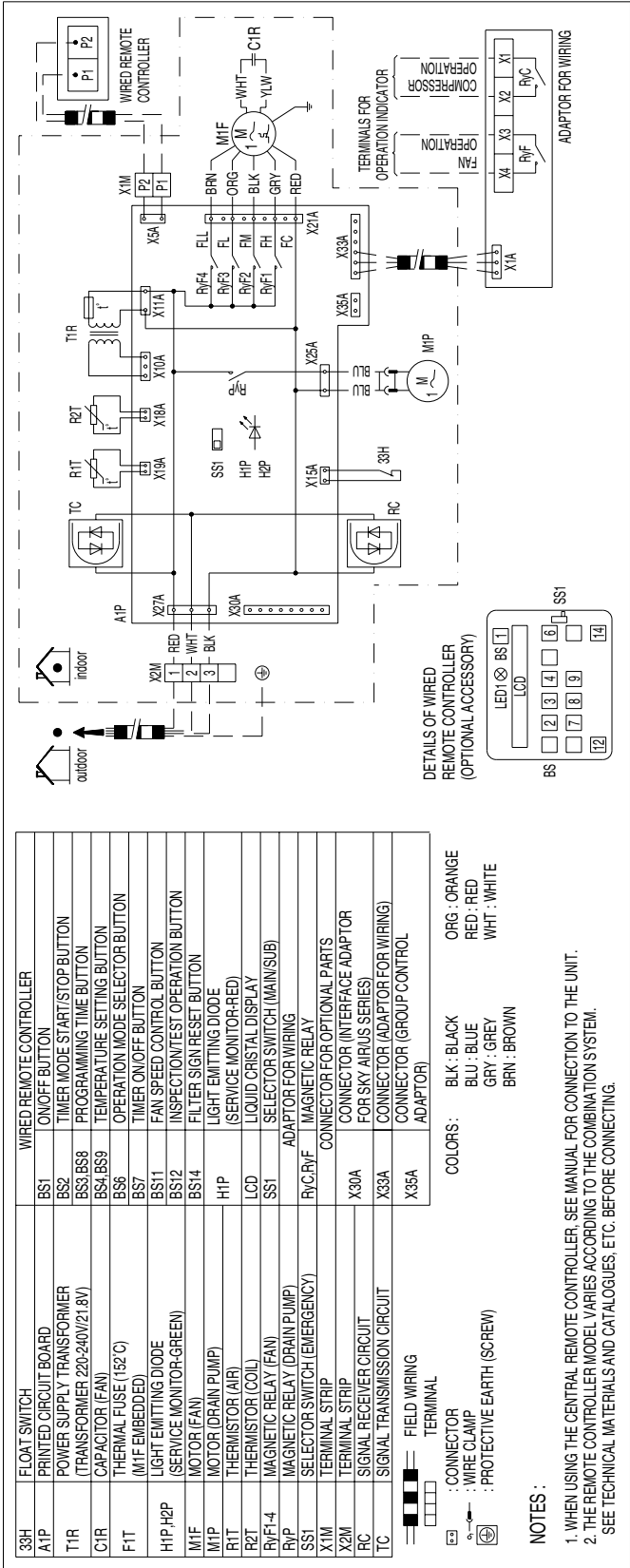
The illustration below shows the wiring diagram of the unit.



7.4 FHYBP100B7V1 and FHYBP125B7V1

Wiring diagram

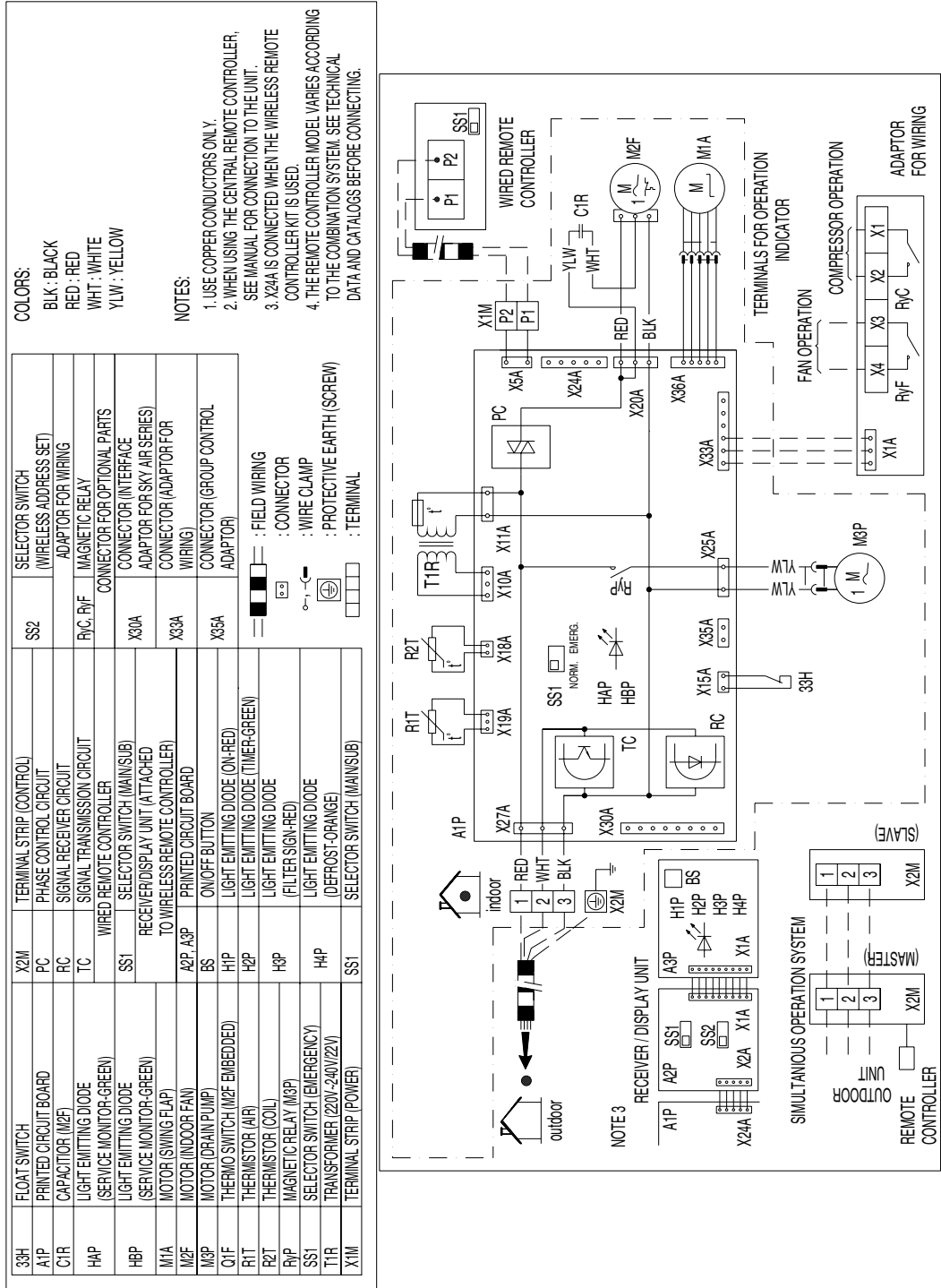
The illustration below shows the wiring diagram of the unit.



7.5 FHYC35BZ7V1, FHYC45BZ7V1, FHYCP35BZ7V1, FHYCP45BZ7V1, FHYCP60BZ7V1, FHYCP71BZ7V1, FHYCP100BZ7V1 and FHYCP125BZ7V1

Wiring diagram

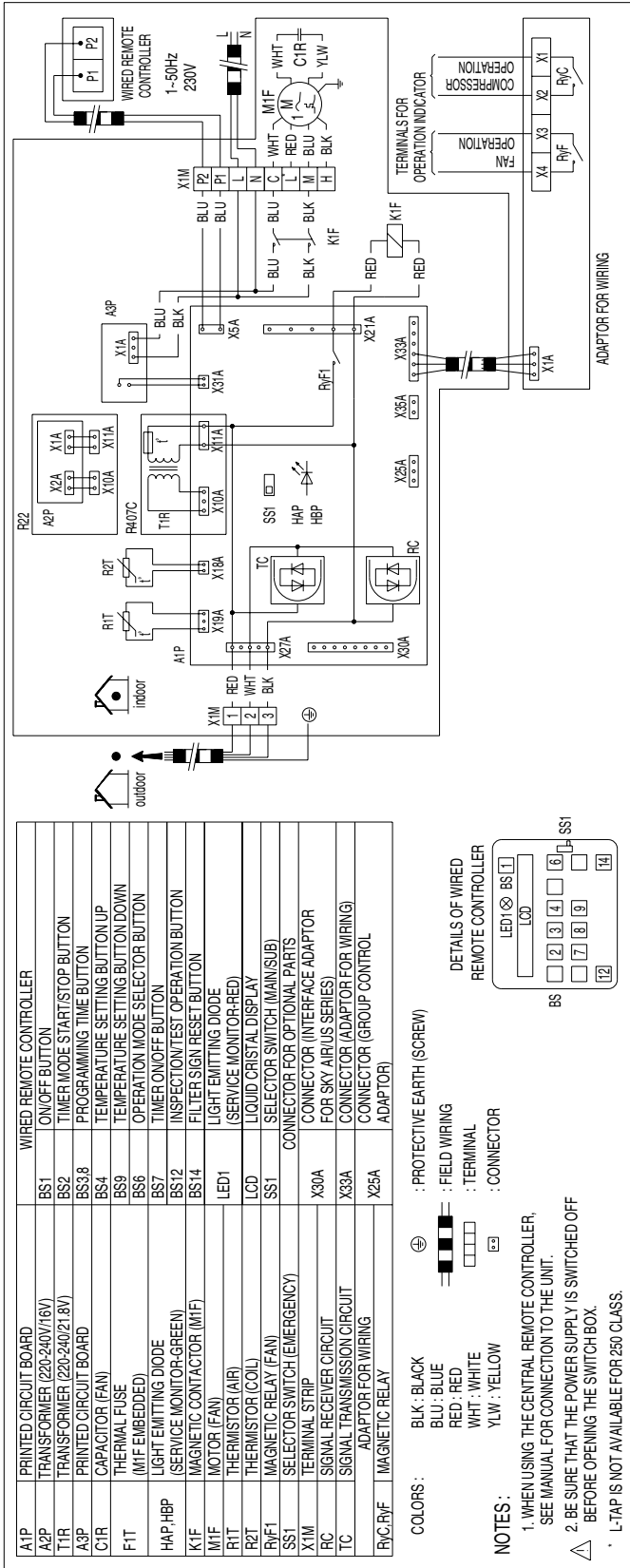
The illustration below shows the wiring diagram of the unit.



7.6 FDYP125B7V1, FDYP200B7V1 and FDYP250B7V1

Wiring diagram

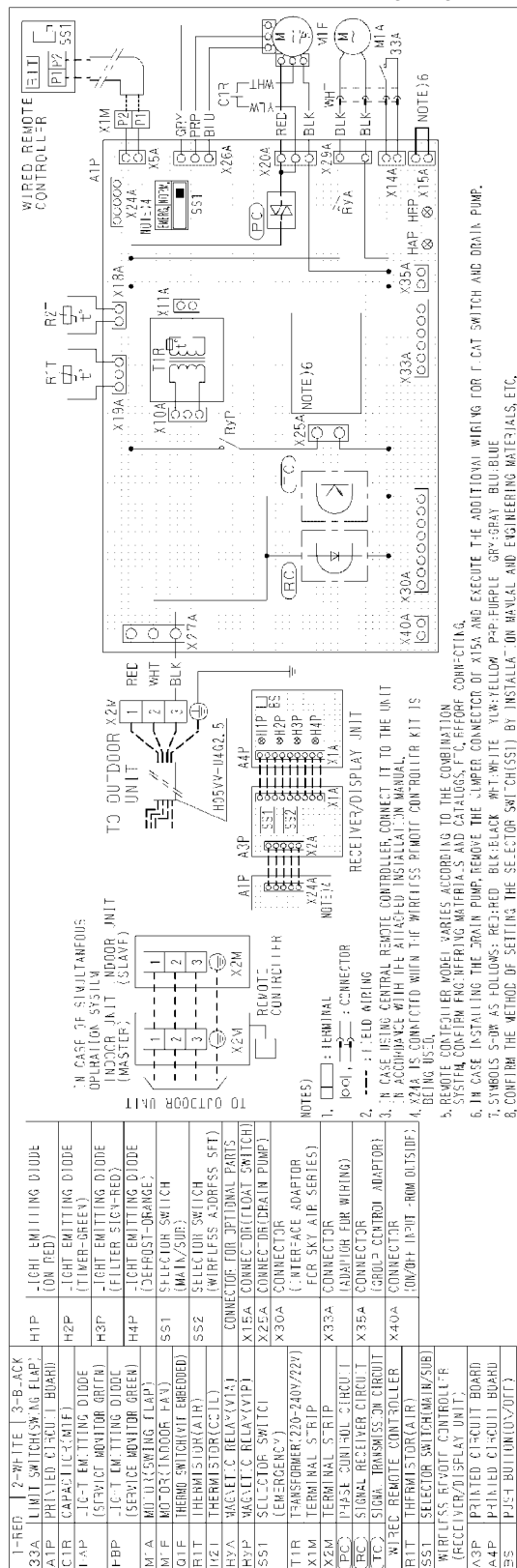
The illustration below shows the wiring diagram of the unit.



7.7 FHYP35BV1, FHYP45BV1, FHYP60BV1, FHYP71BV1, FHYP100BV1 and FHYP125BV1

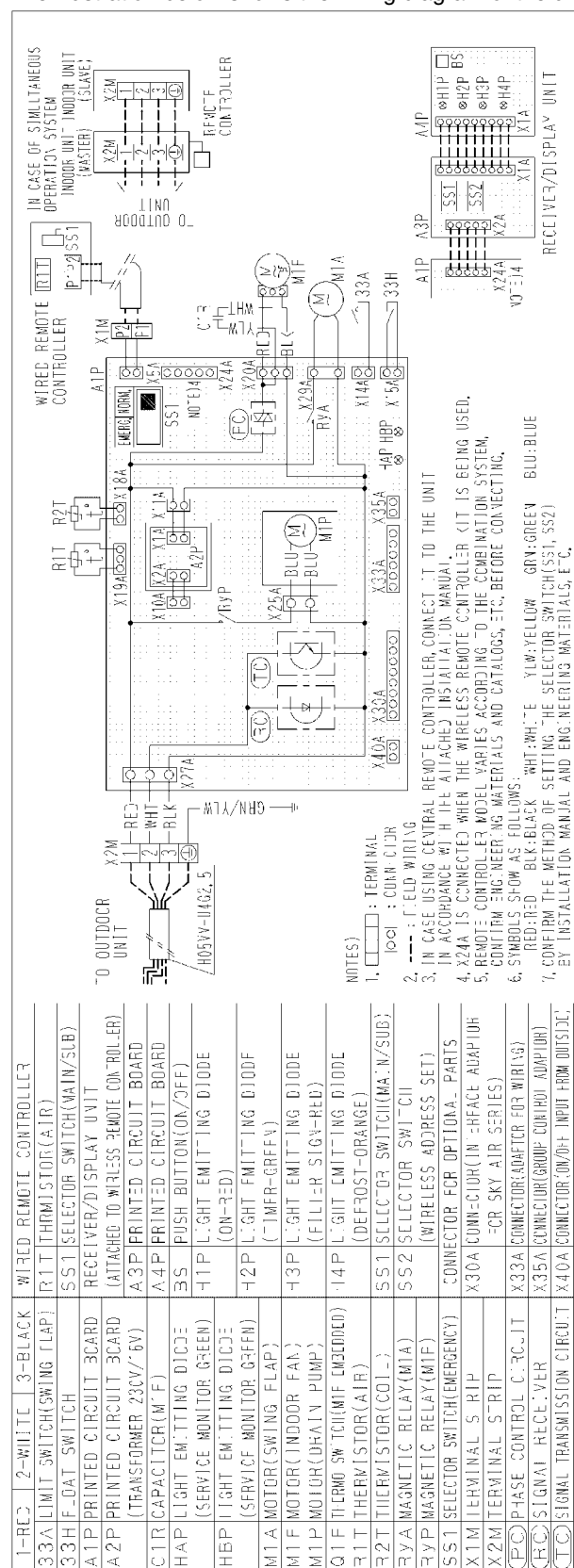
Wiring diagram

The illustration below shows the wiring diagram of the unit.



1

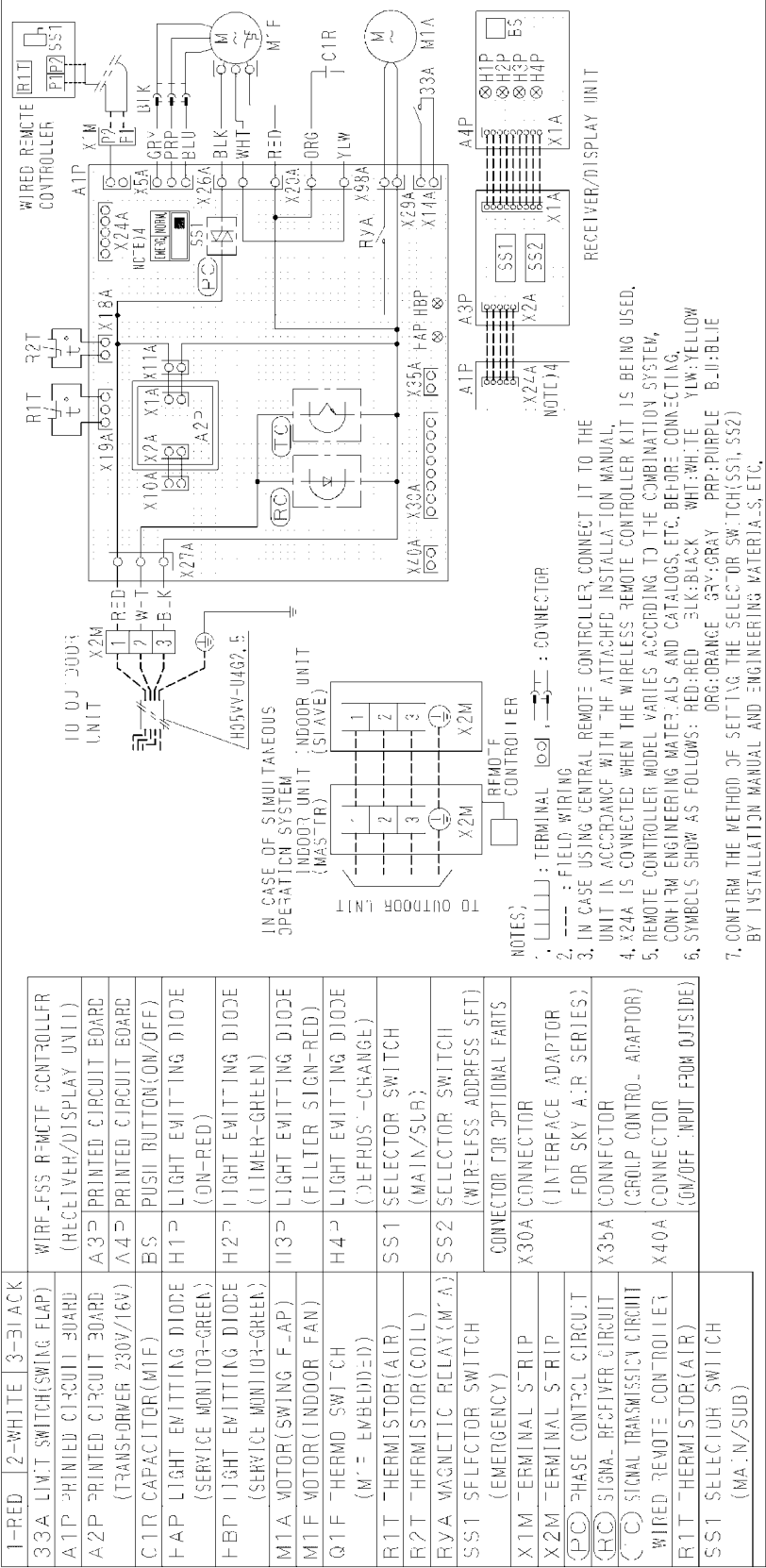
The illustration below shows the wiring diagram of the unit.



7.9 FAYP71BV1 and FAYP100BV1

Wiring diagram

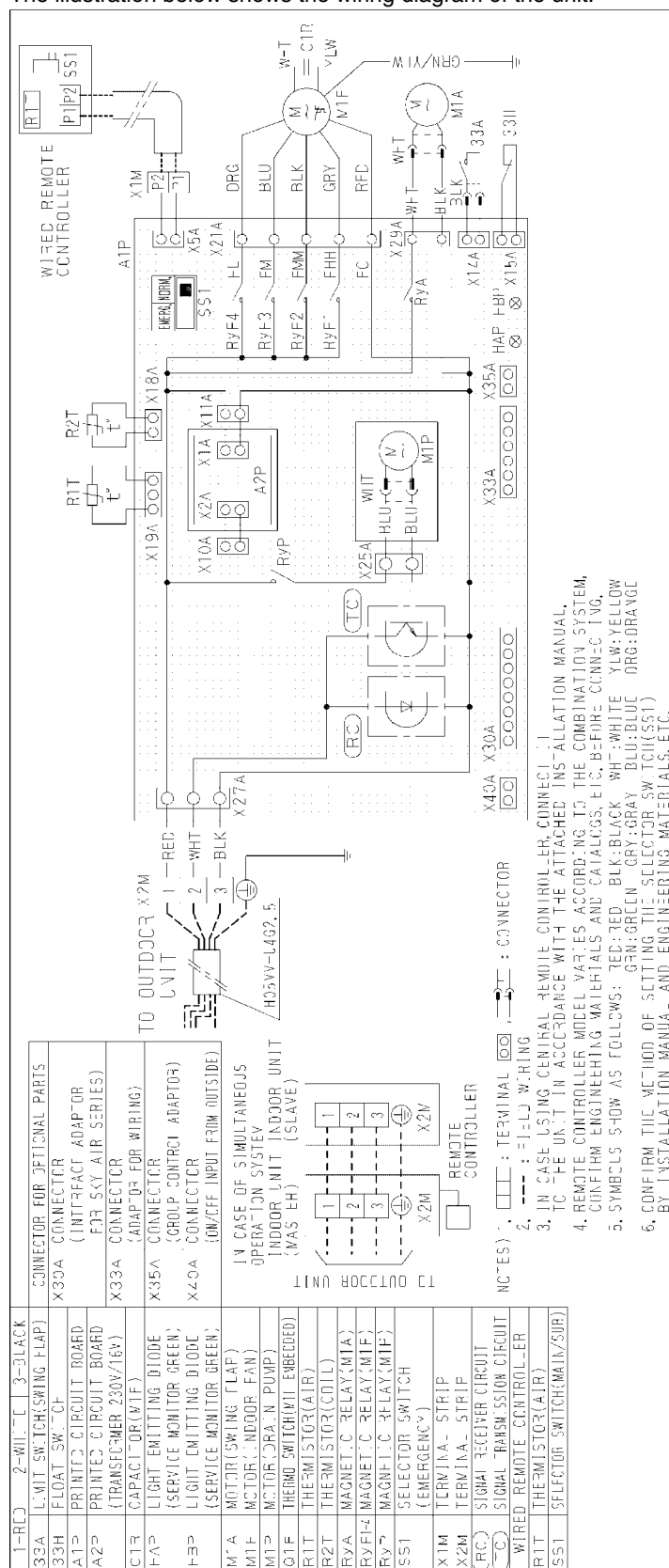
The illustration below shows the wiring diagram of the unit.



7.10 FHYKP35BV1, FHYKP45BV1, FHYKP60BV1 and FHYKP71BV1

Wiring diagram

The illustration below shows the wiring diagram of the unit.



8 PCB Layout

8.1 What Is in This Chapter?

Introduction

This chapter contains the following information:

- It describes which unit uses which PCB types
- It shows the PCB connectors.

PCB layouts

This chapter contains the following PCB layouts:

| PCB layout | See page |
|--|----------|
| 8.2-Outdoor Units: PCB Numbers and Types | 1-146 |
| 8.3-Indoor Units: PCB Numbers and Types | 1-147 |
| 8.4-PCB Types | 1-148 |
| 8.5-PCB Type A | 1-149 |
| 8.6-PCB Type B | 1-150 |
| 8.7-PCB Type D | 1-151 |
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| 8.9-PCB Type F | 1-153 |
| 8.10-PCB Type G | 1-154 |
| 8.11-PCB Type H | 1-155 |
| 8.12-PCB Type I | 1-156 |
| 8.13-PCB Type J | 1-157 |
| 8.14-PCB Type N | 1-158 |
| 8.15-PCB Type O | 1-160 |
| 8.16-PCB Type P | 1-161 |
| 8.17-PCB Type Q | 1-162 |
| 8.18-PCB Type R | 1-163 |

8.2 Outdoor Units: PCB Numbers and Types

No. and types

The table below contains the PCB numbers and types of the outdoor units.

| Outdoor unit | PCB 1 | PCB 2 | PCB 3 |
|--------------|-------------------------|------------------------|------------------------|
| R35GZ7V11 | — | — | — |
| R45GZ7V11 | | | |
| R45GZ7W11 | | | |
| R60GZ7W1 | | | |
| MA56GZ7W11 | 3SW00942-1 (type L) | 2P068330-1 (type H) | 3SA42153-1 (type K) |
| MA90GZ7W11 | 2PB38042-21 (type J) | 3SW00942-1 (type L) | 2PB32067-3 (type I) |
| RP71B7V1 | 3SW00943-1 (type M) | 4SW00962-1 (type N) | — |
| RP71B7W1 | | 4SW00954-1 (type N) | |
| RP71B7T1 | | | |
| RP100B7V1 | | 4SW00963-1 (type N) | |
| RP100B7W1 | | 4SW00955-1 (type N) | |
| RP100B7T1 | | | |
| RP125B7W1 | | | |
| RP125B7T1 | | | |
| RP200B7W1 | | 2P050150-1 (type C) | 4SW00958-1 (type N) |
| RP250B7W1 | | | 4SW00959-1 (type N) |
| RY35EAZ7V1 | 2P019606-1 (type B) | — | — |
| RY45EAZ7V1 | 2P019607-1 (type B) | | |
| RYP71B7V1 | 3SW00943-1 (type M) | 4SW00964-1 (type N) | — |
| RYP71B7W1 | | 4SW00956-1 (type N) | |
| RYP100B7V1 | | 4SW00965-1 (type N) | |
| RYP100B7W1 | | 4SW00957-1 (type N) | |
| RYP125B7W1 | | | |
| RYP200B7W1 | 2P050150-1 (type C) | 3SW00943-1 (type M) | 4SW00960-1 (type N) |
| RYP250B7W1 | | | |

8.3 Indoor Units: PCB Numbers and Types

No. and types

The table below contains the PCB numbers and types of the indoor units.

| Indoor unit | PCB 1 | PCB 2 |
|--------------|--------------------------------------|-------------------------------------|
| FHC35BZ7V1 | 2P053997-1 (type D) | — |
| FHC45BZ7V1 | | |
| FHC60BZ7V1 | | |
| FHYBP35B7V1 | 2P060444-1 (or EC0060A) (type F) | — |
| FHYBP45B7V1 | | |
| FHYBP60B7V1 | | |
| FHYBP71B7V1 | | |
| FHYBP100B7V1 | 2P060445-1 (or EC0061A) (type F) | |
| FHYBP125B7V1 | | |
| FHYC35BZ7V1 | 2P018671-1 (type A) | — |
| FHYC45BZ7V1 | | |
| FHYCP35B7V1 | 2P060443-1 (type E) | — |
| FHYCP45B7V1 | | |
| FHYCP60B7V1 | | |
| FHYCP71B7V1 | | |
| FHYCP100B7V1 | | |
| FHYCP125B7V1 | | |
| FDYP125B7V1 | 3SW00943-1 (type M) | 2P060446-1 (or EC0062A) (type G) |
| FDYP200B7V1 | | |
| FDYP250B7V1 | | |
| FHYP35BV1 | 2P064849-1 (type Q) | — |
| FHYP45BV1 | | |
| FHYP60BV1 | | |
| FHYP71BV1 | | |
| FHYP100BV1 | | |
| FHYP125BV1 | | |
| FUYP71BV17 | 2P060449-1 (type O) | — |
| FUYP100BV17 | | |
| FUYP125BV17 | | |
| FAYP71BV1 | 2P060448-1 (type R) | — |
| FAYP100BV1 | | |
| FHYKP35BV1 | 2P060447-1 (type P) | — |
| FHYKP45BV1 | | |
| FHYKP60BV1 | | |
| FHYKP71BV1 | | |

8.4 PCB Types

PCB types

The table below is an overview of the PCB types.

| PCB type | PCB No. | Unit | See page |
|----------|-------------------------|---|----------|
| A | 2P018671-1 | FHYC35/45BZ7V1 | 1–149 |
| B | 2P019606-1 | RY35EAZ7V1 | 1–150 |
| | 2P019607-1 | RY45EAZ7V1 | |
| C | 2P050150-1 | RP200/250B7W1 RYP200/250B7W1 (not described in this manual) | — |
| D | 2P053997-1 | FHC35/45/60BZ7V1 | 1–151 |
| E | 2P060443-1 | FHYCP35/45/60/71/100/125B7V1 | 1–152 |
| F | 2P060444-1 (or EC0060A) | FHYBP35/45/60/71B7V1 | 1–153 |
| | 2P060445-1 (or EC0061A) | FHYBP100/125B7V1 | |
| G | 2P060446-1 (or EC0062A) | FDYP125/200/250B7V1 | 1–154 |
| H | 2P068330-1 | MA56GZ7W11 | 1–155 |
| I | 2PB32067-3 | MA90GZ7W11 | 1–156 |
| J | 2PB38042-21 | MA90GZ7W11 | 1–157 |
| K | 3SA42153-1 | MA56GZ7W11 (not described in this manual) | — |
| L | 3SW00942-1 | MA90GZ7W11 MA56GZ7W11 (not described in this manual) | |
| M | 3SW00943-1 | RP71/100B7V1/W1/T1 RP125B7W1/T1 RP200/250B7W1 RYP71/100B7V1/W1 RYP125/200/250B7W1 FDYP125/200/250B7V1 (not described in this manual) | |
| N | 4SW00954-1 | RP71B7W1/T1 | 1–158 |
| | 4SW00955-1 | RP100/125B7W1/T1 | |
| | 4SW00956-1 | RYP71B7W1 | |
| | 4SW00957-1 | RYP100/125B7W1 | |
| | 4SW00958-1 | RP200B7W1 | |
| | 4SW00959-1 | RP250B7W1 | |
| | 4SW00960-1 | RYP200/250B7W1 | |
| | 4SW00962-1 | RP71B7V1 | |
| | 4SW00963-1 | RP100B7V1 | |
| | 4SW00964-1 | RYP71B7V1 | |
| | 4SW00965-1 | RYP100B7V1 | |
| O | 2P060449-1 | FUYP71/100/125BV17 | 1–160 |
| P | 2P060447-1 | FHYKP35/45/60/71BV1 | 1–161 |
| Q | 2P064849-1 | FHYP35/45/60/71/100/125BV1 | 1–162 |
| R | 2P060448-1 | FAYP71/100BV1 | 1–163 |

8.5 PCB Type A

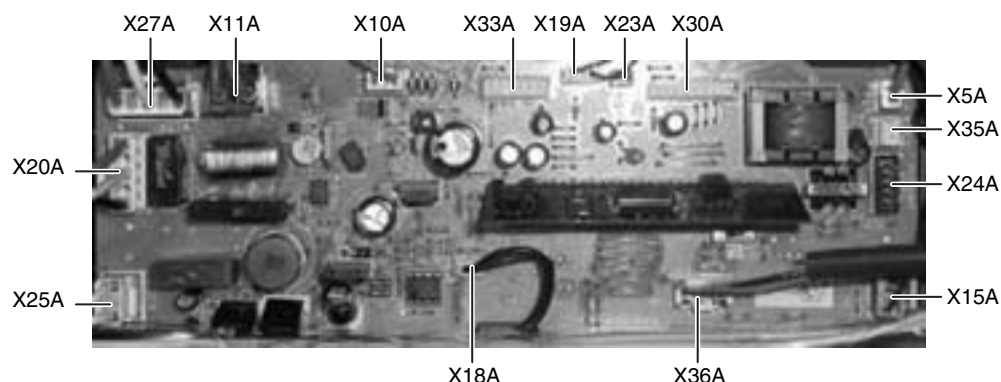
Applicable

The table below contains the applicable PCB number and unit of this PCB type.

| PCB No. | Unit |
|--------------------------------|----------------|
| 2P018671-1 (illustrated below) | FHYC35/45BZ7V1 |

PCB

The illustration below shows the PCB connectors.



Connectors

The table below describes the PCB connectors.

| Connector | Connected to | Description |
|-----------|--------------|--|
| X5A | X1M | Terminal strip (P1 and P2) |
| X10A | T1R | Transformer 230V/22V secondary |
| X11A | T1R | Transformer 230V/22V primary |
| X15A | 33H | Float switch |
| X18A | R2T | Heat exchanger thermistor |
| X19A | R1T | Air thermistor |
| X20A | M2F | Fan motor |
| X23A | — | Connector to capacity adaptor |
| X24A | X2A on A2P | Receiver IR remote control (option) |
| X25A | M3P | Drain pump motor |
| X27A | X2M | Power supply and communication to the outdoor unit |
| X30A | — | Connector to interface adaptor for Sky Air series (DTA102) |
| X33A | — | Connector to X1A on the adaptor for wiring (option KRP1B) |
| X35A | X1A (KRP4) | Connector to group control adaptor power supply (16 VDC) for optional PCB KRP4 |
| X36A | M1A | Swing flap motor |

8.6 PCB Type B

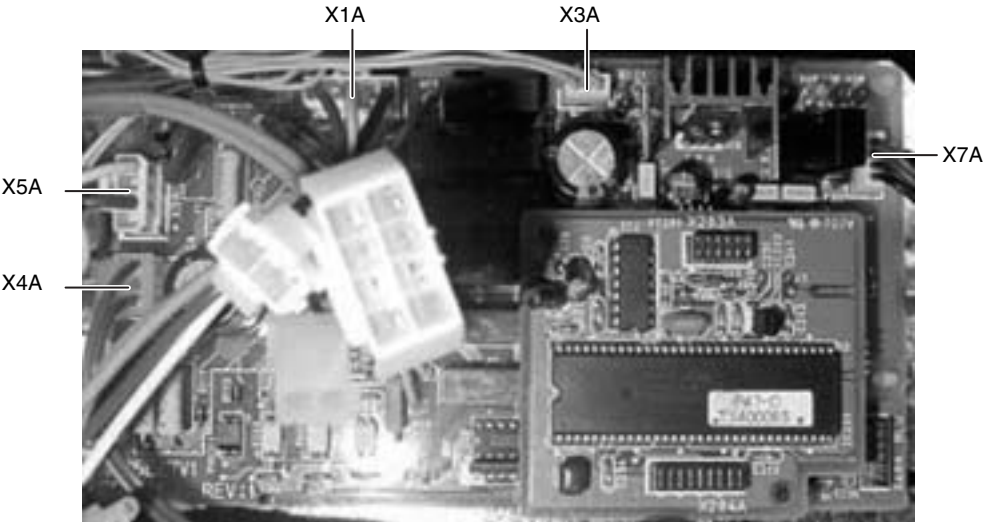
Applicable

The table below contains the applicable PCB numbers and units of this PCB type.

| PCB No. | Unit |
|--------------------------------|------------|
| 2P019606-1 | RY35EAZ7V1 |
| 2P019607-1 (illustrated below) | RY45EAZ7V1 |

PCB

The illustration below shows the PCB connectors.



Connectors

The table below describes the PCB connectors.

| Connector | Connected to | Description |
|-----------|--------------|---|
| X1A | X1M | Terminal strip (power supply PCB and communication to the indoor units) |
| X3A | T1R | Transformer |
| X4A | S2PH | High-pressure switch |
| X5A | T1R | Transformer |
| X7A | R1T and R4T | Outside air thermistor |

8.7 PCB Type D

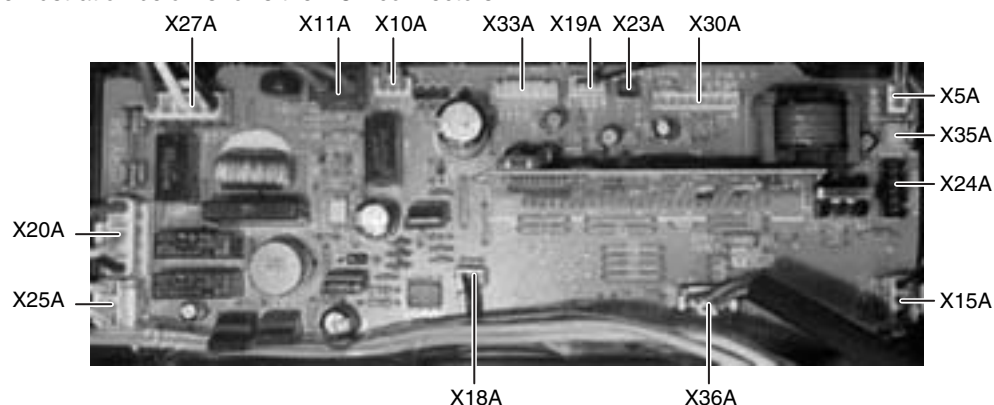
Applicable

The table below contains the applicable PCB number and unit of this PCB type.

| PCB No. | Unit |
|--------------------------------|------------------|
| 2P053997-1 (illustrated below) | FHC35/45/60BZ7V1 |

PCB

The illustration below shows the PCB connectors.



Connectors

The table below describes the PCB connectors.

| Connector | Connected to | Description |
|-----------|--------------|--|
| X5A | X1M | Terminal strip (P1 and P2) |
| X10A | T1R | Transformer 230V/22V secondary |
| X11A | T1R | Transformer 230V/22V primary |
| X15A | 33H | Float switch |
| X18A | R2T | Heat exchanger thermistor |
| X19A | R1T | Air thermistor |
| X20A | M2F | Fan motor |
| X23A | — | Connector to capacity adaptor |
| X24A | X2A on A2P | Receiver IR remote control (option) |
| X25A | M3P | Drain pump motor |
| X27A | X2M | Power supply and communication to the outdoor unit |
| X30A | — | Connector to interface adaptor for Sky Air series (DTA102) |
| X33A | — | Connector to adaptor for wiring (option KRP1B) |
| X35A | X1A (KRP4) | Connector to group control adaptor power supply (16 VDC) for optional PCB KRP4 |
| X36A | M1A | Swing flap motor |

8.8 PCB Type E

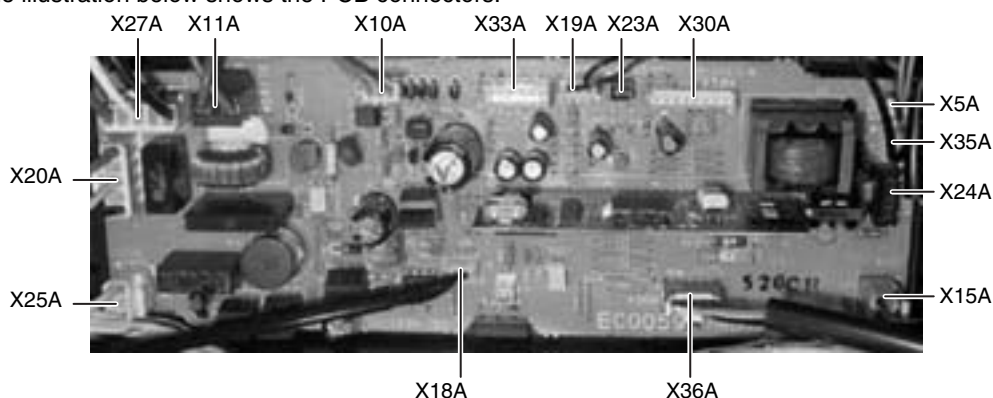
Applicable

The table below contains the applicable PCB number and unit of this PCB type.

| PCB No. | Unit |
|--------------------------------|------------------------------|
| 2P060443-1 (illustrated below) | FHYCP35/45/60/71/100/125B7V1 |

PCB

The illustration below shows the PCB connectors.



Connectors

The table below describes the PCB connectors.

| Connector | Connected to | Description |
|-----------|--------------|--|
| X5A | X1M | Terminal strip (P1 and P2) |
| X10A | T1R | Transformer 230V/22V secondary |
| X11A | T1R | Transformer 230V/22V primary |
| X15A | 33H | Float switch |
| X18A | R2T | Heat exchanger thermistor |
| X19A | R1T | Air thermistor |
| X20A | M2F | Fan motor |
| X23A | — | Connector to capacity adaptor |
| X24A | X2A on A2P | Receiver IR remote control (option) |
| X25A | M3P | Drain pump motor |
| X27A | X2M | Power supply and communication to the outdoor unit |
| X30A | — | Connector to interface adaptor for Sky Air series (DTA102) |
| X33A | — | Connector to adaptor for wiring (option KRP1B) |
| X35A | X1A (KRP4) | Connector to group control adaptor power supply (16 VDC) for optional PCB KRP4 |
| X36A | M1A | Swing flap motor |

8.9 PCB Type F

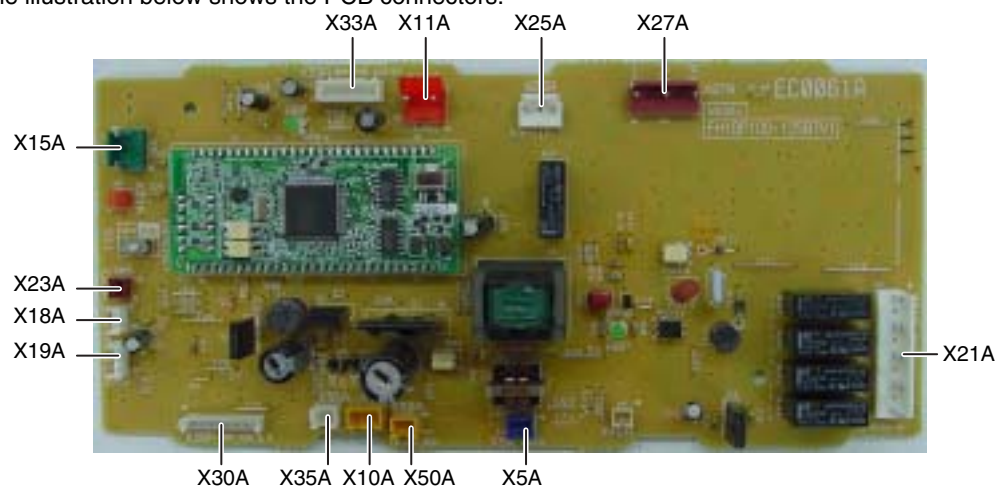
Applicable

The table below contains the applicable PCB numbers and units of this PCB type.

| PCB No. | Unit |
|---|----------------------|
| 2P060444-1 (or EC0060A) | FHYBP35/45/60/71B7V1 |
| 2P060445-1 (or EC0061A) (illustrated below) | FHYBP100/125B7V1 |

PCB

The illustration below shows the PCB connectors.



Connectors

The table below describes the PCB connectors.

| Connector | Connected to | Description |
|-----------|--------------|--|
| X5A | X1M | Terminal strip (P1 and P2) |
| X10A | T1R | Transformer 230V/22V secondary |
| X11A | T1R | Transformer 230V/22V primary |
| X15A | 33H | Float switch |
| X18A | R2T | Heat exchanger thermistor |
| X19A | R1T | Air thermistor |
| X21A | M1F | Fan motor |
| X23A | — | Connector to capacity adaptor |
| X25A | M3P | Drain pump motor |
| X27A | X2M | Power supply and communication to the outdoor unit |
| X30A | — | Connector to interface adaptor for Sky Air series (DTA102) |
| X33A | — | Connector to adaptor for wiring (option KRP1B) |
| X35A | X1A (KRP4) | Connector to group control adaptor power supply (16 VDC) for optional PCB KRP4 |
| X50A | | In case no transfo is used: Connector to power supply PCB |

8.10 PCB Type G

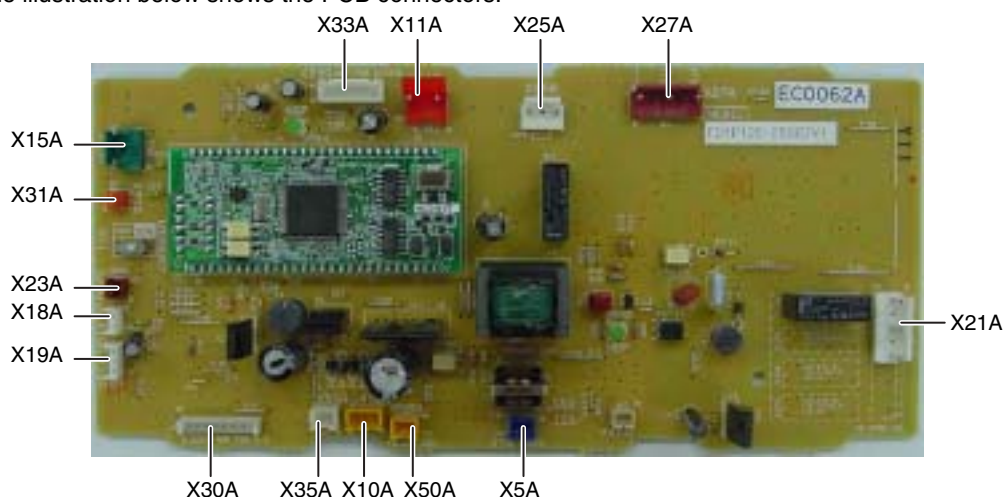
Applicable

The table below contains the applicable PCB number and unit of this PCB type.

| PCB No. | Unit |
|---|---------------------|
| 2P060446-1 (or EC0062A) (illustrated below) | FDYP125/200/250B7V1 |

PCB

The illustration below shows the PCB connectors.



Connectors

The table below describes the PCB connectors.

| Connector | Connected to | Description |
|-----------|--------------|--|
| X5A | X1M | Terminal strip (P1 and P2) |
| X10A | T1R | Transformer 230V/22V secondary |
| X11A | T1R | Transformer 230V/22V primary |
| X15A | 33H | Float switch |
| X18A | R2T | Heat exchanger thermistor |
| X19A | R1T | Air thermistor |
| X21A | K1F | Magnetic contactor for fan motor (M1F) |
| X23A | — | Connector to capacity adaptor |
| X25A | M3P | Drain pump motor |
| X27A | X2M | Power supply and communication to the outdoor unit |
| X30A | — | Connector to interface adaptor for Sky Air series (DTA102) |
| X31A | — | Connector to A3P (interlock PCB) |
| X33A | — | Connector to adaptor for wiring (option KRP1B) |
| X35A | X1A (KRP4) | Connector to group control adaptor power supply (16 VDC) for optional PCB KRP4 |
| X50A | — | In case no transfo is used: Connector to power supply PCB |

8.11 PCB Type H

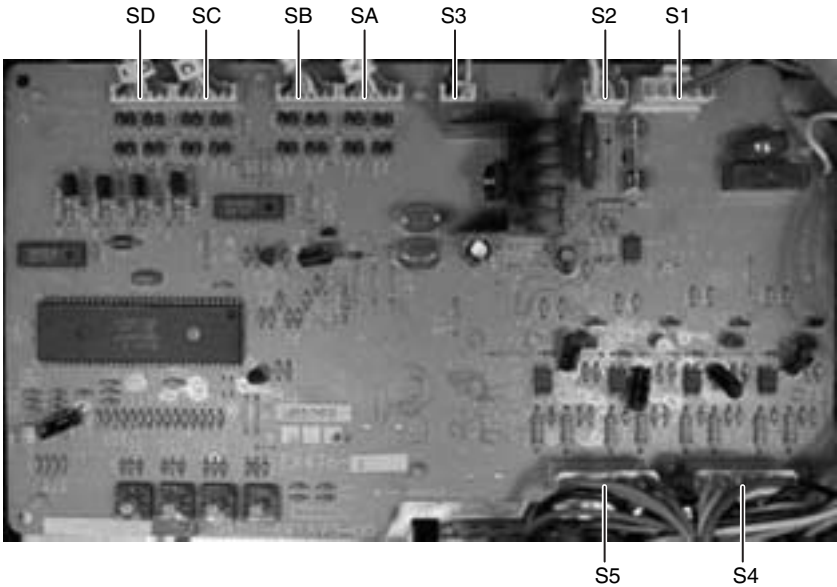
Applicable

The table below contains the applicable PCB number and unit of this PCB type.

| PCB No. | Unit |
|--------------------------------|------------|
| 2P068330-1 (illustrated below) | MA56GZ7W11 |

PCB

The illustration below shows the PCB connectors.



Connectors

The table below describes the PCB connectors.

| Connector | Connected to | Description |
|-----------|--------------|----------------------------|
| S1 | — | Power supply |
| S2 | T1R | Transformer |
| S3 | PCB2 | — |
| S4 | X2M | Room A and B |
| S5 | X2M | Room C and D |
| SA | Y11E | Electronic expansion valve |
| SB | Y12E | |
| SC | Y13E | |
| SD | Y14E | |

8.12 PCB Type I

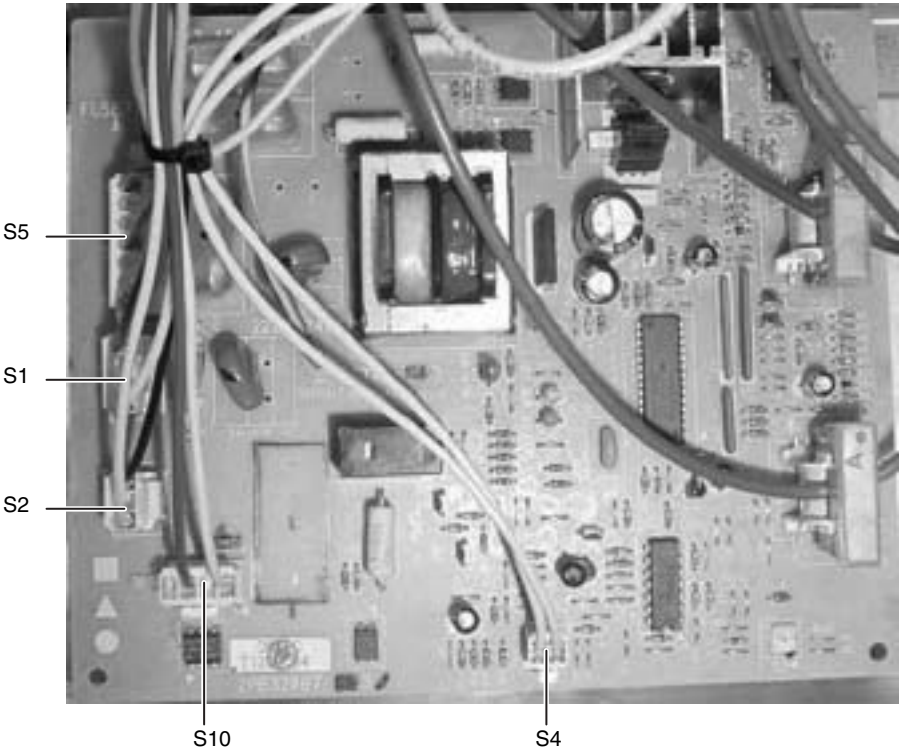
Applicable

The table below contains the applicable PCB number and unit of this PCB type.

| PCB No. | Unit |
|--------------------------------|------------|
| 2PB32067-3 (illustrated below) | MA90GZ7W11 |

PCB

The illustration below shows the PCB connectors.



Connectors

The table below describes the PCB connectors.

| Connector | Connected to | Description |
|-----------|--------------|---|
| S1 | — | Transformer |
| S2 | X21A | Connector |
| S4 | S2PH | High-pressure switch |
| S5 | — | Power supply |
| S10 | — | Connector for compressor overload/overcurrent |

8.13 PCB Type J

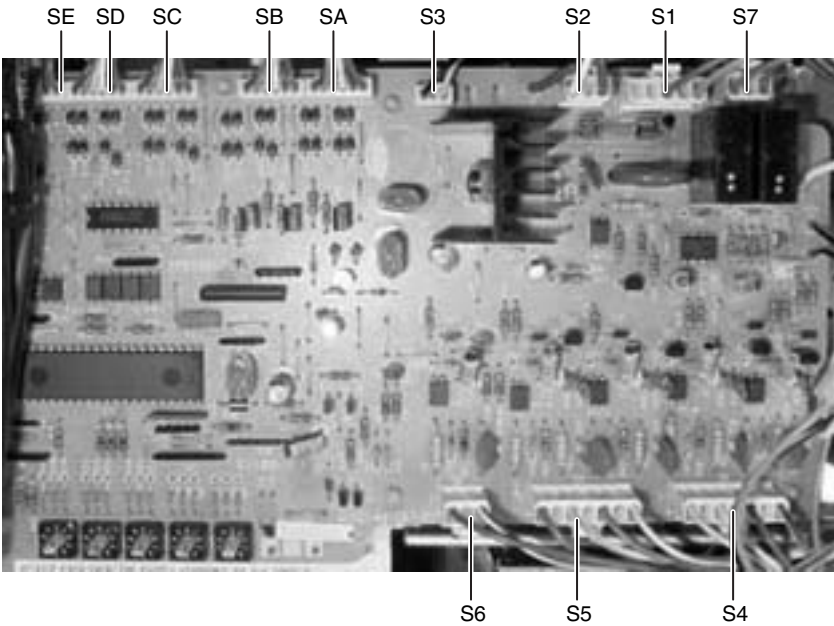
Applicable

The table below contains the applicable PCB number and unit of this PCB type.

| PCB No. | Unit |
|---------------------------------|------------|
| 2PB38042-21 (illustrated below) | MA90GZ7W11 |

PCB

The illustration below shows the PCB connectors.



Connectors

The table below describes the PCB connectors.

| Connector | Connected to | Description |
|-----------|--------------|----------------------------|
| S1 | X3M | Terminal strip |
| S2 | T1R | Transformer |
| S3 | PCB2 | — |
| S4 | X2M | Room A and B |
| S5 | X2M | Room C and D |
| S6 | X2M | Room E |
| S7 | Y1S | Solenoid valve |
| SA | Y11E | Electronic expansion valve |
| SB | Y12E | |
| SC | Y13E | |
| SD | Y14E | |
| SE | Y15E | |

8.14 PCB Type N

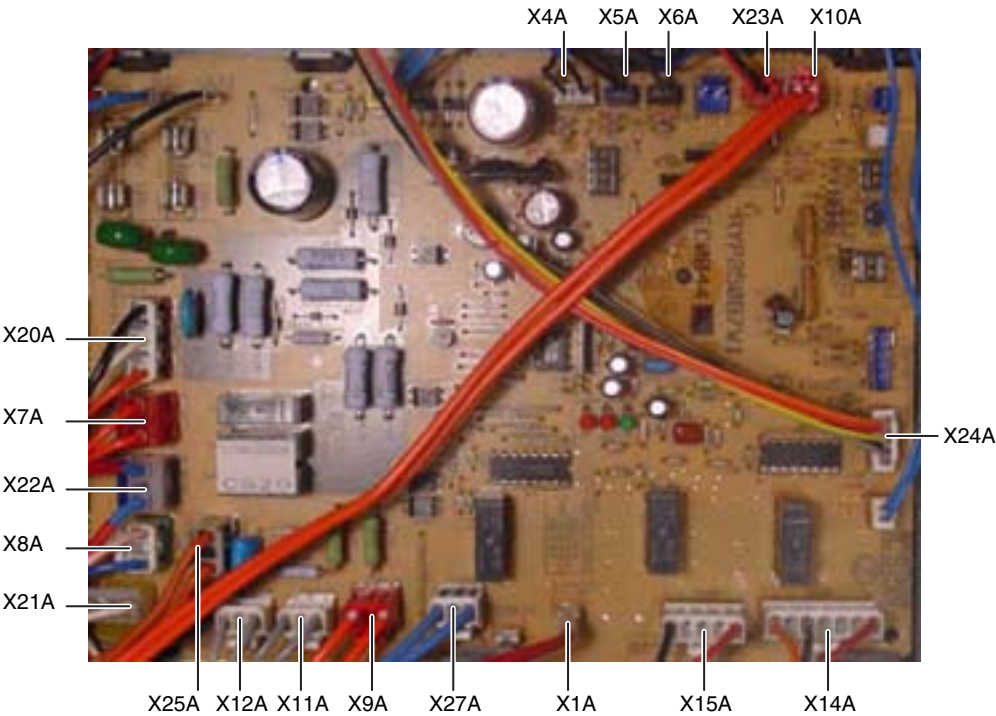
Applicable

The table below contains the applicable PCB numbers and units of this PCB type.

| PCB No. | Unit |
|--------------------------------|------------------|
| 4SW00954-1 | RP71B7W1/T1 |
| 4SW00955-1 | RP100/125B7W1/T1 |
| 4SW00956-1 | RYP71B7W1 |
| 4SW00957-1 | RYP100/125B7W1 |
| 4SW00958-1 | RP200B7W1 |
| 4SW00959-1 | RP250B7W1 |
| 4SW00960-1 (illustrated below) | RYP200/250B7W1 |
| 4SW00962-1 | RP71B7V1 |
| 4SW00963-1 | RP100B7V1 |
| 4SW00964-1 | RYP71B7V1 |
| 4SW00965-1 | RYP100B7V1 |

PCB

The illustration below shows the PCB connectors.



Connectors

The table below describes the PCB connectors.

| Connector | Connected to | Description |
|-----------|--------------|---------------------------|
| X1A | X2A on A3P | |
| X4A | R1T | Air thermistor |
| X5A | R2T | Heat exchanger thermistor |
| X6A | R3T | Discharge thermistor |
| X7A | T1R | Transformer |
| X8A | K1M | Magnetic contactor (M1C) |
| X9A | S1PH | High-pressure switch |
| X10A | S1LP | Low-pressure switch |
| X11A | Q1L | Thermo switch (M1F) |
| X12A | Q2L | Thermo switch (M2F) |
| X14A | M1F | Fan motor 1 |
| X15A | M2F | Fan motor 2 |
| X20A | X1M | Terminal strip |
| X21A | F1C | Over current relay |
| X22A | Y1R | 4-way valve |
| X23A | X1A on A2P | — |
| X24A | Y1E | Expansion valve |
| X25A | J1HC | Crankcase heater |
| X27A | Y1S | Solenoid valve |

8.15 PCB Type O

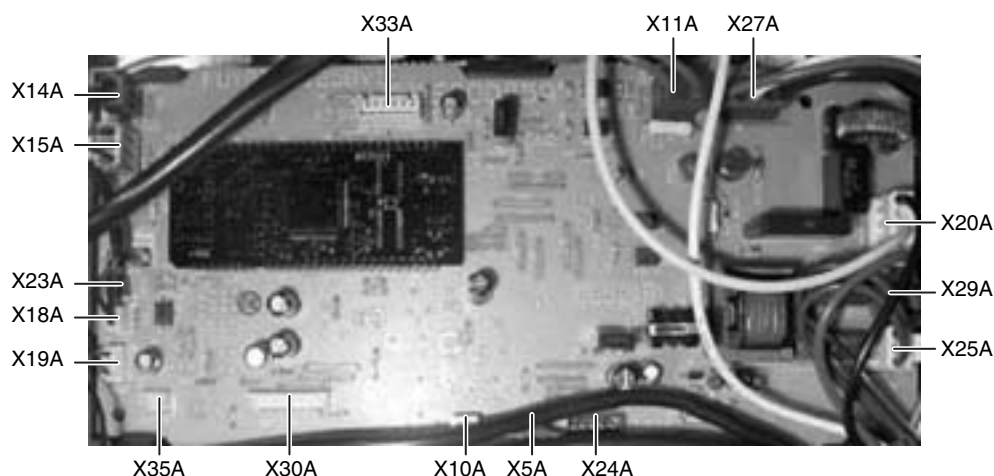
Applicable

The table below contains the applicable PCB number and unit of this PCB type.

| PCB No. | Unit |
|--------------------------------|--------------------|
| 2P060449-1 (illustrated below) | FUYP71/100/125BV17 |

PCB

The illustration below shows the PCB connectors.



Connectors

The table below describes the PCB connectors.

| Connector | Connected to | Description |
|-----------|--------------|--|
| X5A | X1M | Terminal strip (P1 and P2) |
| X10A | X2A on A2P | PCB (transformer 230 V/16 VDC) |
| X11A | X1A on A2P | PCB (transformer 230 V/16 VDC) |
| X14A | 33A | Limit switch (swing flap) |
| X15A | 33H | Float switch |
| X18A | R2T | Heat exchanger thermistor |
| X19A | R1T | Air thermistor |
| X20A | M1F | Fan motor |
| X23A | — | Connector for capacity adaptor |
| X24A | X2A on A3P | Connected when the infrared remote control kit is used |
| X25A | M1P | Drain pump motor |
| X27A | X2M | Power supply and communication to the outdoor unit |
| X29A | M1A | Swing flap motor |
| X30A | — | Connector to interface adaptor for Sky Air series (DTA102) |
| X33A | — | Connector to adaptor for wiring (option KRP1B) |
| X35A | X1A (KRP4) | Connector to group control adaptor power supply (16 VDC) for optional PCB KRP4 |

8.16 PCB Type P

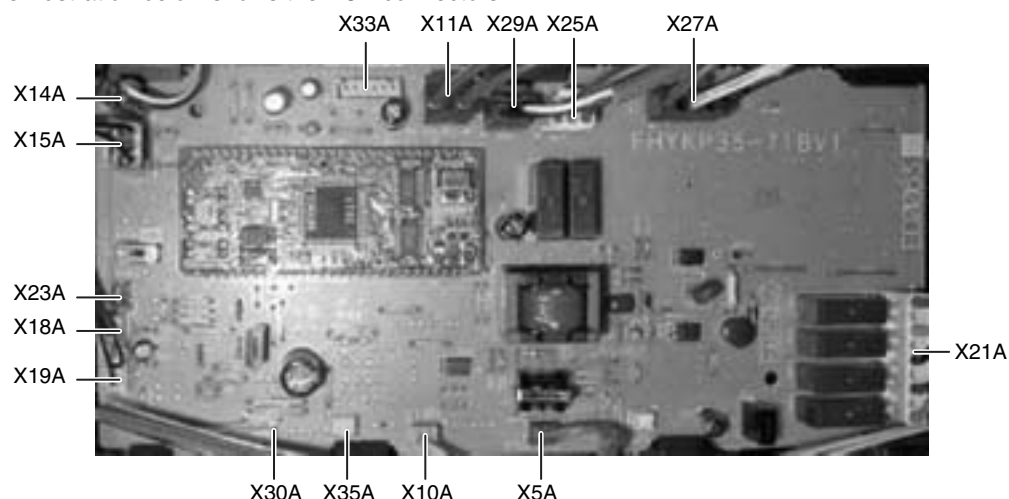
Applicable

The table below contains the applicable PCB number and unit of this PCB type.

| PCB No. | Unit |
|--------------------------------|---------------------|
| 2P060447-1 (illustrated below) | FHYKP35/45/60/71BV1 |

PCB

The illustration below shows the PCB connectors.



Connectors

The table below describes the PCB connectors.

| Connector | Connected to | Description |
|-----------|--------------|--|
| X5A | X1M | Terminal strip (P1 and P2) |
| X10A | X2A on A2P | PCB (transformer 230 V/16 VDC) |
| X11A | X1A on A2P | PCB (transformer 230 V/16 VDC) |
| X14A | 33A | Limit switch (swing flap) |
| X15A | 33H | Float switch |
| X18A | R2T | Heat exchanger thermistor |
| X19A | R1T | Air thermistor |
| X21A | — | Fan motor |
| X23A | — | Connector to capacity adaptor |
| X25A | M1P | Drain pump motor |
| X27A | X2M | Power supply and communication to the outdoor unit |
| X29A | M1A | Swing flap motor |
| X30A | — | Connector to interface adaptor for Sky Air series (DTA102) |
| X33A | — | Connector to adaptor for wiring (option KRP1B) |
| X35A | X1A (KRP4) | Connector to group control adaptor power supply (16 VDC) for optional PCB KRP4 |

8.17 PCB Type Q

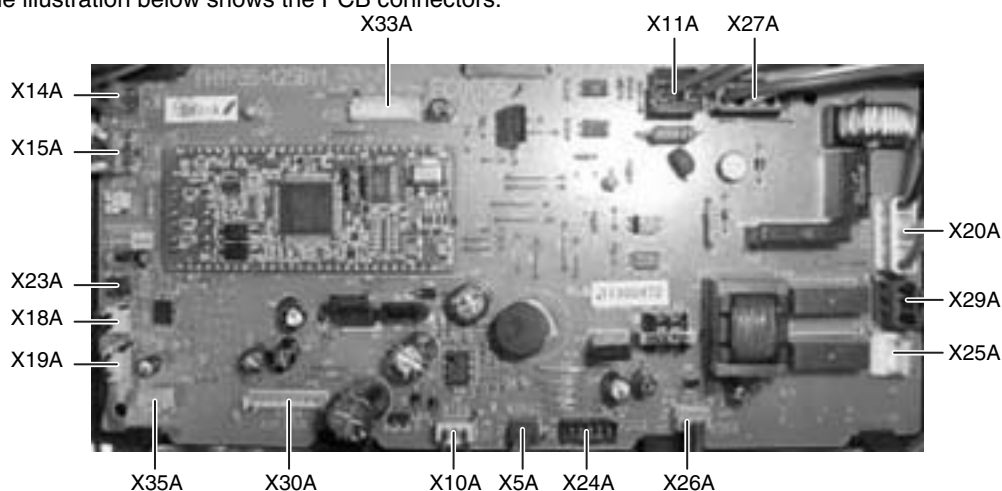
Applicable

The table below contains the applicable PCB number and unit of this PCB type.

| PCB No. | Unit |
|--------------------------------|----------------------------|
| 2P064849-1 (illustrated below) | FHYP35/45/60/71/100/125BV1 |

PCB

The illustration below shows the PCB connectors.



Connectors

The table below describes the PCB connectors.

| Connector | Connected to | Description |
|-----------|--------------|---|
| X5A | X1M | Terminal strip (P1 and P2) |
| X10A | T1R | Transformer 230 V/22 V |
| X11A | T1R | Ttransformer 230 V/22 V |
| X14A | 33A | Limit switch (swing flap) |
| X15A | — | When installing the drain pump, remove the jumper connector of X15A and carry out the additional wiring for float switch and drain pump. Connector to float switch |
| X18A | R2T | Heat exchanger thermistor |
| X19A | R1T | Air thermistor |
| X20A | M1F | Fan motor |
| X23A | — | Connector for capacity adaptor |
| X24A | X2A on A3P | X24A is connected when the infrared remote control kit is used |
| X25A | — | Connector to drain pump motor |
| X26A | M1F | Fan motor feedback cable |
| X27A | X2M | Power supply and communication to the outdoor unit |
| X29A | M1A | Swing flap motor |
| X30A | — | Connector to interface adaptor for Sky Air series (DTA102) |
| X33A | — | Connector to adaptor for wiring (option KRP1B) |
| X35A | X1A (KRP4) | Connector to group control adaptor power supply (16 VDC) for optional PCB KRP4 |

8.18 PCB Type R

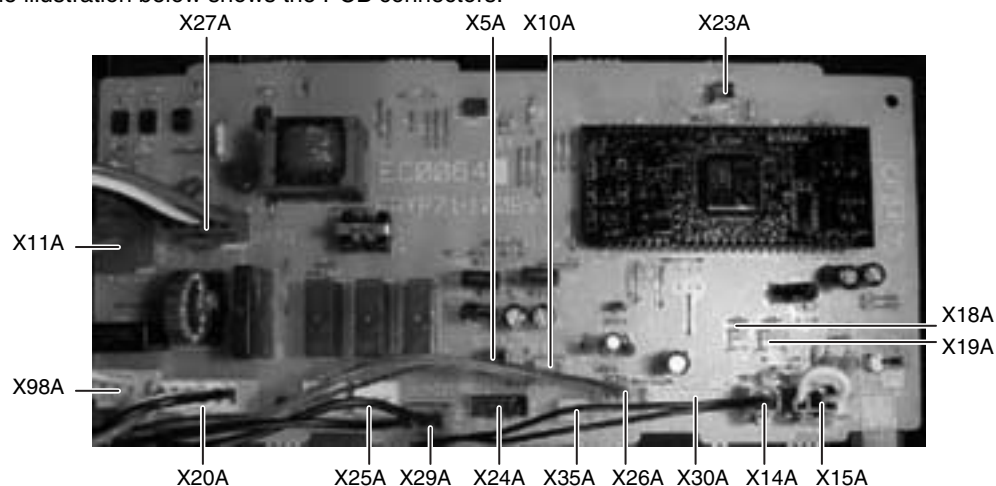
Applicable

The table below contains the applicable PCB number and unit of this PCB type.

| PCB No. | Unit |
|--------------------------------|---------------|
| 2P060448-1 (illustrated below) | FAYP71/100BV1 |

PCB

The illustration below shows the PCB connectors.



Connectors

The table below describes the PCB connectors.

| Connector | Connected to | Description |
|-----------|--------------|--|
| X5A | X1M | Terminal strip (P1 and P2) |
| X10A | X2A on A2P | Power supply PCB |
| X11A | X1A on A2P | Power supply PCB |
| X14A | 33A | Limit switch (swing flap) |
| X15A | — | Float switch |
| X18A | R2T | Heat exchanger thermistor |
| X19A | R1T | Air thermistor |
| X20A | M1F | Fan motor power supply |
| X23A | — | Connector for capacity adaptor |
| X24A | X2A on A3P | X24A is connected when the wireless remote control is used |
| X25A | — | Drain pump motor |
| X26A | M1F | Fan motor feedback cable |
| X27A | X2M | Power supply and communication to the outdoor unit |
| X29A | M1A | Swing flap motor |
| X30A | — | Connector to interface adaptor for Sky Air series (DTA102) |
| X35A | X1A (KRP4) | Connector to group control adaptor power supply (16 VDC) for optional PCB KRP4 |
| X98A | C1R | Capacitor (M1F) |

1

Part 2

Functional Description

2

What is in this part?

This part contains the following chapters:

| Chapter | See page |
|--|----------|
| 1-General Functionality | 2-3 |
| 2-Overview of the cooling mode functions | 2-25 |
| 3-Overview of the heating mode functions | 2-37 |

2

1 General Functionality

1.1 What Is in This Chapter?

Introduction

This chapter contains information on the functions used to control the system. Understanding these functions is vital when diagnosing a malfunction that is related to the functional control.

Overview

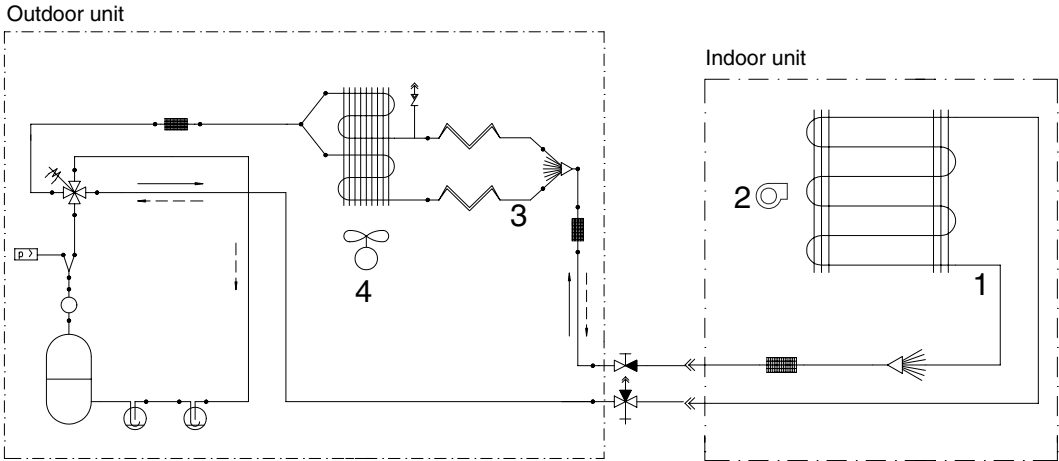
This chapter contains the following topics:

| Topic | See page |
|--|----------|
| 1.2–Functions of Thermistors: Small Heat Pumps | 2–4 |
| 1.3–Functions of Thermistors: Large Heat Pumps | 2–5 |
| 1.4–Operating Modes and Control Modes | 2–7 |
| 1.5–Forced Operating Mode (Emergency Operation) | 2–8 |
| 1.6–Switching to Forced Operating Mode (Emergency Operation) | 2–10 |
| 1.7–Thermostat Control | 2–11 |
| 1.8–Forced Thermostat OFF | 2–13 |
| 1.9–HPS and LPS Function | 2–14 |
| 1.10–Simulated Operation Function | 2–15 |
| 1.11–Discharge Pipe Temperature Control | 2–16 |
| 1.12–Gas Shortage Function | 2–17 |
| 1.13–Crankcase Heater Control (R(Y)P200-250B Only) | 2–18 |
| 1.14–Drain Pump Control | 2–19 |
| 1.15–Fan and Flap Operations | 2–21 |
| 1.16–Auto-Restart Function | 2–22 |
| 1.17–Using Conditions for Remote Control Thermostat | 2–23 |

1.2 Functions of Thermistors: Small Heat Pumps

Locating the thermistors

The thermistors on the illustration below are used to control the system. This control secures a proper operation and prevents problems of the unit.



Functions of the thermistors

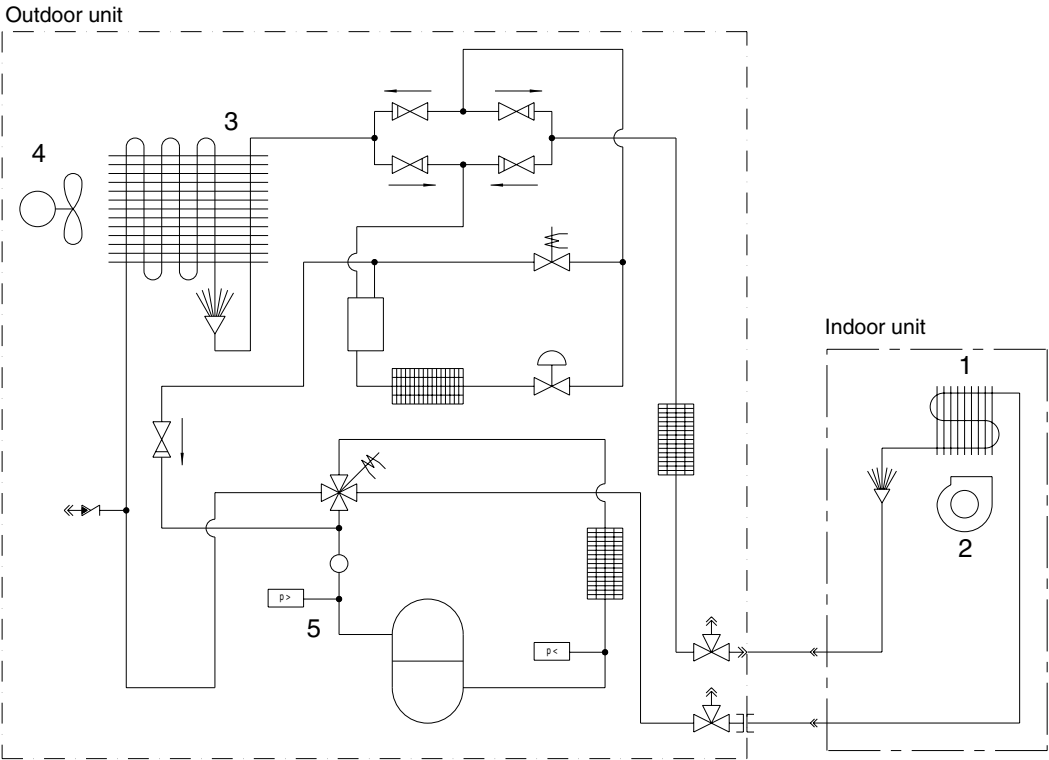
The table below contains the functions of the small h/p.

| Ther-mistor | Location | Wiring symbol | Mode | Function |
|-------------|------------------------|---------------|---------|--|
| 1 | Indoor heat exchanger | R2T | Cooling | Freeze-up thermostat |
| | | | Heating | ■ Hot start indoor fan ■ Peak cut-off |
| 2 | Indoor air return | R1T | Cooling | Thermostat control |
| | | | Heating | Thermostat control |
| 3 | Outdoor heat exchanger | R2T | Cooling | Not used |
| | | | Heating | ■ Frost prevention and overload prevention ■ Defrost initiation and termination |
| 4 | Outdoor air return | R1T | Cooling | Low ambient control |
| | | | Heating | ■ Frost prevention ■ Defrost initiation |

1.3 Functions of Thermistors: Large Heat Pumps

Locating the thermistors

The thermistors on the illustration below are used to control the system. This control secures a proper operation and prevents problems of the unit.



Functions of the thermistors

The table below contains the thermistor functions of the large h/p.

| Ther-mistor | Location | Wiring symbol | Mode | Function |
|-------------|-----------------------|---------------|----------|--|
| 1 | Indoor heat exchanger | R2T | Cooling | <ul style="list-style-type: none">■ Optimise discharge temp. (evap. temp.)■ Freeze-up thermostat |
| | | | Heat-ing | <ul style="list-style-type: none">■ Optimise discharge temp. (cond. temp.)■ Integral capacity calculation (to determine defrost)■ Hot start indoor fan■ Peak cut-off■ Outdoor unit fan control |
| 2 | Indoor air return | R1T | Cooling | <ul style="list-style-type: none">■ Thermostat control■ Start-up control expansion valve and outdoor unit fan■ Outdoor fan speed control |
| | | | Heat-ing | <ul style="list-style-type: none">■ Thermostat control■ Start-up control expansion valve and outdoor unit fan■ Integral capacity calculation (to determine defrost)■ Peak cut-off |

2

| Ther-mistor | Location | Wiring symbol | Mode | Function |
|-------------|---------------------------|---------------|----------|--|
| 3 | Outdoor heat exchanger | R2T | Cooling | <ul style="list-style-type: none"> ■ Optimise discharge temp. (cond. temp.) ■ Integral capacity calculation (to determine freeze-up) |
| | | | Heat-ing | <ul style="list-style-type: none"> ■ Optimise discharge temp. (evap. temp.) ■ Defrost start/stop |
| 4 | Outdoor air return | R1T | Cooling | <ul style="list-style-type: none"> ■ Outdoor fan speed control ■ Start-up control expansion valve and outdoor unit fan ■ Integral capacity calculation (to determine freeze-up) |
| | | | Heat-ing | <ul style="list-style-type: none"> ■ Integral capacity calculation (to determine defrost) ■ Start-up control expansion valve and outdoor unit fan |
| 5 | Discharge pipe compressor | R3T | Cooling | <ul style="list-style-type: none"> ■ Cooling overload ■ Check refrigerant shortage/too much refrigerant ■ Expansion valve control |
| | | | Heat-ing | <ul style="list-style-type: none"> ■ Heating overload ■ Check refrigerant shortage/too much refrigerant ■ Expansion valve control |

1.4 Operating Modes and Control Modes

Operating modes

The two operating modes are:

- Normal operating mode
- Forced operating mode.

Control modes

The table below contains the different control modes of the Sky Air B-series air conditioners.

| Operating mode | Control mode |
|-----------------------|------------------------|
| Normal operating mode | Cooling |
| | Dry keep |
| | Heating |
| | Defrosting (automatic) |
| | Pump down |
| | Stop mode |
| Forced operating mode | Forced cooling |
| | Forced heating |
| | Forced defrosting |

1.5 Forced Operating Mode (Emergency Operation)

Applicable units

The forced operating mode is applicable for the following units:

| Model type | For this unit, you can go to... |
|-----------------|--|
| RY35-45E(A)Z7V1 | <ul style="list-style-type: none"> ■ Forced cooling mode ■ Capacity control |
| RP71-250B | Forced cooling mode |
| RYP71-250B | <ul style="list-style-type: none"> ■ Forced cooling mode ■ Forced heating mode |

Purpose

The table below describes the purpose of the forced operating mode.

| If... | Then... |
|--|---|
| <ul style="list-style-type: none"> ■ Remocon is malfunctioning, or ■ Indoor PCB is off line, or ■ Outdoor PCB is off line | Forced operating mode can be used to go to cooling or heating. In forced operating mode, the compressor is forced to operate until the malfunctioning indoor or outdoor PCB is back online. |

Starting conditions

You can operate the system manually by changing the emergency switch on the indoor and outdoor PCB from “normal” to “emergency”. However, when in emergency operation, the equipment cannot control the temperature.

Make sure to set both indoor and outdoor unit to emergency. See page 2–10.

Ending conditions

You can end the emergency operation by changing the emergency switch back to “normal” while the power is OFF.

Emergency operation

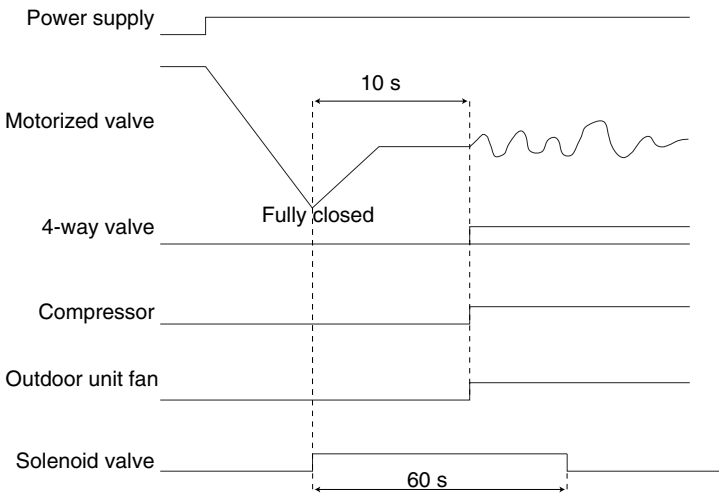
The table below describes what happens when you change the emergency switch to “emergency”.

| Changing the emergency switch to “emergency” for the... | Switches ON... |
|---|--|
| Indoor unit | <ul style="list-style-type: none"> ■ Indoor fan ■ Drain pump |
| Outdoor unit | <ul style="list-style-type: none"> ■ Compressor ■ Outdoor fan(s) |

Time chart

The time chart below illustrates emergency operation.

- In cooling, the unit runs for 20 min and then stops for 10 min in order to avoid freeze-up of the indoor coil.
- During emergency operation, do not attempt to operate the equipment from the remote control. The remote control shows 88 while the emergency operation is active on the indoor unit.



Active components

The table below shows when the most important components are active in the different forced operating modes.

| Component | Forced cooling | Forced heating | Forced defrosting |
|------------------|--|--|--|
| Compressor | ON | ON | ON |
| 4-way valve | ■ RY35-45E(A)Z7V1: ON ■ RYP71-250B: OFF | ■ RY35-45E(A)Z7V1: OFF ■ RYP71-250B: ON | ■ RY35-45E(A)Z7V1: ON ■ RYP71-250B: OFF |
| Outdoor unit fan | H fan speed | H fan speed | OFF |
| Indoor unit fan | H fan speed | H fan speed | H fan speed |
| Drain pump | ON | OFF | ON |

Additional info

To avoid misunderstandings, take the following into account:

- If the PCB or the motorized valve is malfunctioning, emergency operation cannot be carried out.
- No signal is transmitted between the indoor and outdoor units and remocon.
- If a safety device should be activated during emergency operation, all actuators are turned OFF.
- "Heat" cannot be set for c/o air conditioners.
- Emergency operation uses (and switches ON) both indoor and outdoor control PCBs. The outdoor control PCB determines the changeover.
- In heating, defrosting is activated once every hour.

1.6 Switching to Forced Operating Mode (Emergency Operation)

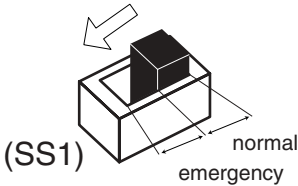
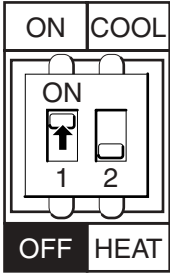
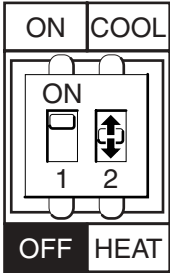
Before switching

Before moving the switches to emergency operation, make sure to turn OFF the power firstly.

During emergency operation, do not attempt to operate the equipment from the remote control. The remote control displays 88 while the emergency operation is active on the indoor unit.

Switching

To switch to forced operating mode, proceed as follows:

| Step | Action |
|------|--|
| 1 | Turn OFF the power. |
| 2 | Switch ON the emergency switch (SS1) on the indoor PCB. <div></div> |
| 3 | Switch ON the emergency switch on the outdoor PCB. <div></div> <p>Switch 2 is not applicable for the c/o units.</p> |
| 4 | Switch the emergency switch on the outdoor PCB to the forced mode you prefer. <div></div> <p>Switch 2 is not applicable for the c/o units.</p> |
| 5 | Turn ON the power. |

Before switching back

Before moving the switches back to normal operating mode, make sure to turn OFF the power firstly.

1.7 Thermostat Control

Applicable units

All units

Purpose

The purpose of thermostat control is to control the compressor operation, by sensing the suction air.

Preventing thermostat OFF conditions

The thermostat control prevents the thermostat from turning OFF in the following conditions:

- Initial operation for the first 2.5 min, or
- Defrosting, or
- Forced operating mode.

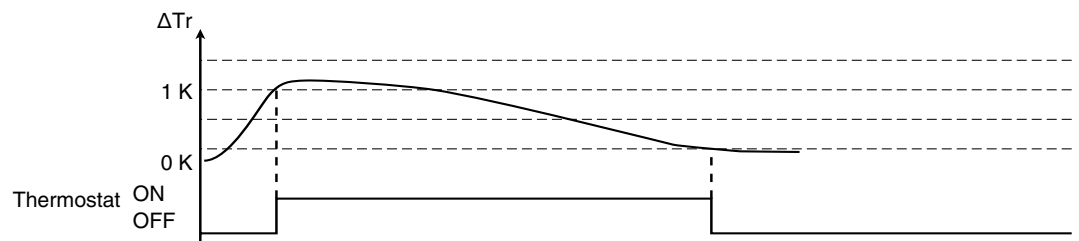
ΔTr

The table below shows how to calculate ΔTr .

| In... | $\Delta Tr =$ | Remark |
|---------|---------------|--|
| Cooling | $Tr - Ts$ | <ul style="list-style-type: none"> ■ Tr = indoor unit suction air temp. ■ Ts = temp. set by the remote control |
| Heating | $Ts - Tr$ | |

Time chart

The time chart below illustrates the thermostat control.



Thermostat

The table below describes when the thermostat turns ON and OFF.

| When... | Then the thermostat turns... |
|---|------------------------------|
| <ul style="list-style-type: none"> ■ $\Delta Tr \geq 1 \text{ K}$ ■ Guard timer of the compressor has counted down (3 min) | ON |
| <ul style="list-style-type: none"> ■ $\Delta Tr \leq 0 \text{ K}$ ■ Thermostat is ON for min. 2 min | OFF |

Preset temp. range

The table below illustrates the preset temperature range.

| | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|--|----------|--|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|--|
| | | | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | | |
| Cooling | Display | | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div>Initial setting</div> | | | | | | | | | | | | | | | | | | | | |
| | Setting | | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | | | | | | | | | | |
| Heating | Display | | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | | | | | | | | | | |
| | Setting | | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | | | | | | | | | | |
| Remote control | Cooling | | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | | | | | | | | | | |
| | Heating | | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | | | | | | | | | | |
| | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div>Automatic change-over</div> | Wired | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> | | | | | | | | | | | | | | | | | | | | |
| | | Wireless | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div>Example</div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div>(19) (21) (22) (23) (25)</div> | | | | | | | | | | | | | | | | | | | | |
| | Cool/heat selection | | <div>(When the display is "25" or "H")</div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div>Automatic cooling</div> <div>Automatic heating</div> <div>-2°C</div> <div>+2°C</div> | | | | | | | | | | | | | | | | | | | | |
| | Thermostat ON/OFF | Cooling | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div>Thermostat ON</div> <div>Thermostat OFF</div> <div>+1°C</div> | | | | | | | | | | | | | | | | | | | | |
| | | Heating | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div>Thermostat ON</div> <div>Thermostat OFF</div> <div>-1°C</div> | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |

1.8 Forced Thermostat OFF

Applicable units All indoor units

Purpose The outdoor unit independently turns its thermostat OFF by means of control other than thermostat OFF commands from the indoor unit.

Method The table below contains the different conditions for which the thermostat is turned OFF by the outdoor unit.

| Thermostat OFF control | Indicator | Starting conditions | Result | Reset |
|--|---------------------------------------|---|---|-------------|
| Freeze-up function: See page 2-27. | | | | |
| Cooling overload Only for R(Y)P71-250B | Outdoor heat exchanger temperature Tc | Tc > 63°C for 90 s continuously (min. 60 - max. 66°C for practice function) | The thermostat is turned OFF. | Remocon OFF |
| Heating overload (peak cut-off) | Indoor heat exchanger temperature Tc | Tc > 62.5°C for 30 s continuously (min. 59.5 - max. 65.5°C for practice function) | Next start, initial opening E.V.: + 70 pulses (cooling) + 80 pulses (heating) | |
| Discharge pipe high temperature Only for R(Y)P71-250B | Discharge pipe temperature T2 | Td > 125°C for 20 s continuously | | |
| Td disconnection Only for R(Y)P71-250B | Discharge pipe thermistor T2 | Td is determined to be disconnected from the piping 5 min after the compressor starts. Td < 55°C Td < Ta + 10°C $\Delta Td \leq 5 \text{ K}$ | Retry 6 x until final error "F3" | |

Used input The forced thermostat OFF control uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|-----------------------------------|--------------------------|---------------------------|
| Outdoor heat exchanger thermistor | — | R2T |
| Indoor heat exchanger thermistor | R2T | — |
| Discharge pipe thermistor | — | R3T |

1.9 HPS and LPS Function

Applicable units R(Y)P71-250B

Purpose

HPS (High-Pressure Switch)

If the pressure at the discharge side of the compressor becomes abnormally high, the HPS stops the unit automatically in order to prevent it from breaking down.

LPS (Low-Pressure Switch)

If the pressure at the suction side of the compressor becomes abnormally low, the LPS stops the unit automatically in order to prevent it from breaking down.

Method

The table below describes what happens in case of HPS or LPS activation.

| If the... is activated | Then... | Remark |
|------------------------|---|--|
| HPS | The compressor stops and stands by for 3 min. | If this is activated an additional 6 times from the first detection and before it is turned OFF by the remote control, the operation stops due to malfunction. |
| LPS | The compressor stops and stands by for 3 min. However, depending on the operating conditions, the compressor may not turn OFF. | |

Used input

The HPS and LPS detection function uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|----------------------|--------------------------|---------------------------|
| High-pressure switch | — | X9A |
| Low-pressure switch | — | X10A |

1.10 Simulated Operation Function

Applicable units

- R(Y)P71-250B
- RY35-45E(A)Z7V1

Purpose

The purpose of the simulated operation function is to avoid the unit from stopping if the heat exchanger thermistor or air thermistor is malfunctioning.

Method

If the air thermistor (for all models listed) or the heat exchanger thermistor is malfunctioning (out of its normal range), simulated operation is carried out while malfunction is displayed on the remote control. If the air or heat exchanger thermistor becomes normal again, the simulated operation function is interrupted and the normal operation restarts. The malfunctioning error disappears.

Used input

The simulated operation function uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|-----------------------------------|--------------------------|---------------------------|
| Outdoor air thermistor | — | R1T-X4A |
| Outdoor heat exchanger thermistor | — | R2T-X5A |
| Indoor air thermistor | R1T-X19A | — |
| Indoor heat exchanger thermistor | R2T-X18A | — |

1.11 Discharge Pipe Temperature Control

Applicable units R(Y)P71-250B

Purpose

The purpose of the discharge pipe temperature control is to prevent a discharge pipe temperature that is too high or too low.

Low temp. starting conditions

The table below contains the low temperature conditions to start the discharge pipe temperature control.

| Function | Description | Starting conditions | F3-error occurs if the conditions... |
|----------------|---|--|--------------------------------------|
| Wet operation | Prevents liquid suction to the compressor. | <ul style="list-style-type: none"> Change in E.V. opening < 50 pulses $T_d < T_c + 10^\circ\text{C}$ | Are met for 15 min continuously. |
| Thermistor out | Detects if the discharge thermistor is not in the correct position. | <ul style="list-style-type: none"> $T_d < 55^\circ\text{C}$ After start-up + 5 min: <ul style="list-style-type: none"> $\Delta T_d \leq 5\text{ K}$ $T_d < T_a + 10^\circ\text{C}$ | Are repeated 6 times. |

High temp. starting conditions

The table below contains the high temperature conditions to start the discharge pipe temperature control.

| Function / description | Starting conditions | F3-error occurs if the conditions... |
|--|--|--------------------------------------|
| Detects too high discharge gas temperatures. | $T_d \geq 125^\circ\text{C}$ for 20 s continuously | Are repeated 6 times. |

Used input

The discharge pipe temperature control uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|-----------------------------------|--------------------------|---------------------------|
| Outdoor discharge thermistor | — | R3T-X6A |
| Outdoor heat exchanger thermistor | — | R2T-X5A |
| Indoor heat exchanger thermistor | R2T-X18A | — |

1.12 Gas Shortage Function

Applicable units

R(Y)P71-250B

Purpose

The purpose of the gas shortage function is to detect refrigerant shortage before the unit stops due to a discharge temperature that is too high.

Method

When the thermostat is turned OFF due to a discharge pipe temperature that is too high and the E.V. opening is 450 pulses or more, the gas shortage error is activated. However, operation does not stop due to gas shortage.

To check the gas shortage error (U0), see page 3–54.

Used input

The gas shortage function uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|------------------------------|--------------------------|---------------------------|
| Outdoor discharge thermistor | — | R3T-X6A |
| Outdoor expansion valve | — | Y1E-X24A |

1.13 Crankcase Heater Control (R(Y)P200-250B Only)

Applicable units

R(Y)P200-250B

Purpose

The purpose of the crankcase heater control is to prevent refrigerant from remaining in the compressor by heating the crankcase heater of the compressor.

Method

Check the discharge temperature of the compressor during an OFF-cycle.

Starting and ending conditions

The table below describes the starting and ending conditions.

| If... | And | Then the crankcase heater is... |
|------------------------------------|-----------|---------------------------------|
| Compressor OFF (K1M not energized) | Td < 70°C | ON |
| | Td > 75°C | OFF |
| Compressor ON (K1M energized) | — | |

1.14 Drain Pump Control

Applicable units

The drain pump control is applicable for the following units:

| Model type | Model name |
|------------|--------------------------------------|
| Cassette | FHYCP (standard) and FUYP (standard) |
| Duct | FHYBP (standard) and FDYP (optional) |
| Corner | FHYKP (standard) |
| Ceiling | FHYP (optional) |

Purpose

The purpose of the drain pump control is to control the water draining from the drain pan.

Starting conditions

The drain pump control starts the drain pump when one of the following conditions is fulfilled:

- The cooling operation is activated, or
- The level in the drain pan becomes abnormally high, or
- Freeze-up prevention is detected in cooling operation.

Method

The float switch opens because an abnormal drain level is detected in the drain pan.

The table below describes the activation at open float switch.

| Situation | Activation at open float switch |
|--|---|
| Thermostat ON | <ol style="list-style-type: none"> 1. The thermostat is immediately turned OFF. 2. The drain pump continues to operate for minimum 10 min. 3. If the float switch closes again within 80 s, cooling can restart after the 10 min recovery. |
| Thermostat OFF | <ol style="list-style-type: none"> 1. The thermostat stays forced OFF. 2. The drain pump starts to operate for minimum 10 min. 3. If the float switch closes again within 80 s, cooling can restart after the 10 min recovery. |
| Float switch opens each time the drain pump stops. | After five retrials the error code "RF" flashes on the remote control. |

Used input

The drain pump control uses the following inputs:

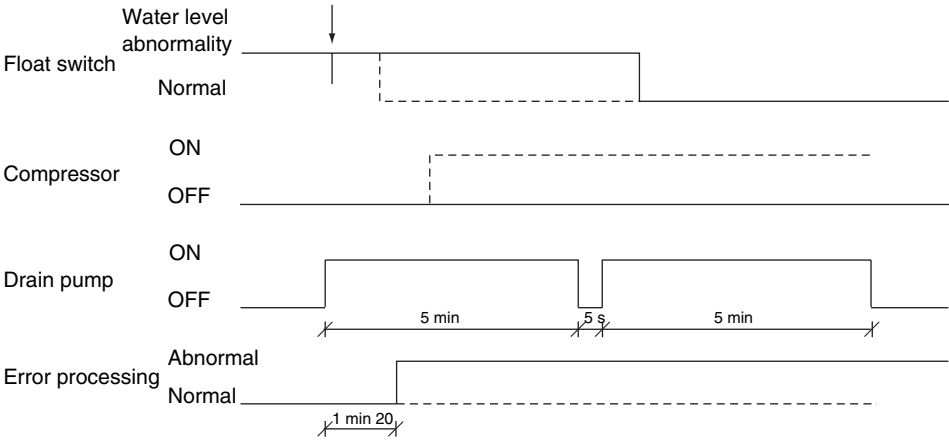
| Input | Connection on indoor PCB | Connection on outdoor PCB |
|---------------------------------|--------------------------|---------------------------|
| Float switch (33H) | X15A | — |
| Magnetic relay drain pump (RyP) | X25A | — |

Detection system

All applicable units use a drain pan water level detection system of the float type.

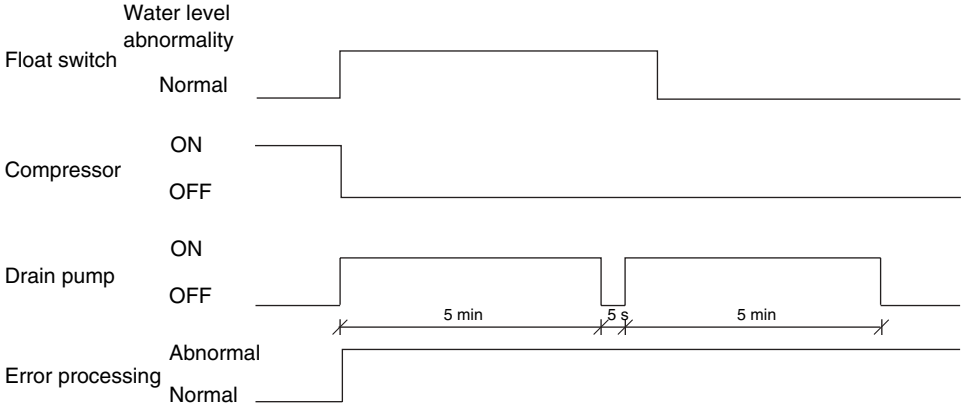
Float type: During start-up

The time chart below illustrates the drain pump control during start-up.



Float type: During operation (compr. ON)

The time chart below illustrates the drain pump control during start-up.



1.15 Fan and Flap Operations

Heating operation The table below contains the fan and flap operations.

| Function | In... | Fan | Flap (FHYCP, FHYKP and FHYP) | Flap (FAYP) | Remote control indication |
|--|---------------------------|-----|------------------------------|---------------------------|---------------------------|
| Hot start after defrost | Swing operation | OFF | Horizontal | Horizontal | Swing |
| | Airflow direction setting | | | | Set position |
| Defrost | Swing operation | | | | Swing |
| | Airflow direction setting | | | | Set position |
| Thermostat OFF | Swing operation | LL | | | Swing |
| | Airflow direction setting | | | | Set position |
| Hot start after thermostat OFF (cold air prevention) | Swing operation | | | | Swing |
| | Airflow direction setting | | | | Set position |
| Stop (error) | Swing operation | OFF | | Fully closed (horizontal) | — |
| | Airflow direction setting | | | Fully closed | |
| Overload thermostat OFF | Swing operation | LL | | Horizontal | Swing |
| | Airflow direction setting | | | | Set position |

Cooling operation The table below contains the fan and flap operations.

| Function | In... | Fan | Flap (FHYCP, FHYKP and FHYP) | Flap (FAYP) | Remote control indication |
|--|---------------------------|---------|------------------------------|-----------------------|---------------------------|
| Thermostat ON (microcomputer controlled dry keep mode) | Swing operation | L | Swing | Swing | Swing |
| | Airflow direction setting | | Setting | Setting | Set position |
| Thermostat OFF (microcomputer controlled dry keep mode) | Swing operation | OFF | Horizontal | Horizontal | Swing |
| | Airflow direction setting | | Setting | Setting | Set position |
| Thermostat OFF (cooling) | Swing operation | Setting | Horizontal | Horizontal | Swing |
| | Airflow direction setting | | Setting | Setting | Set position |
| Stop (error) | Swing operation | OFF | Horizontal | Downward (horizontal) | — |
| | Airflow direction setting | | Setting | Downward | |
| Freeze-up prevention in microcomputer controlled dry keep mode (including cooling operation) | Swing operation | L | Horizontal | Horizontal | Swing |
| | Airflow direction setting | | Setting | Setting | Set position |

1.16 Auto-Restart Function

| | |
|-------------------|---|
| Applicable units | All units |
| Purpose | The purpose of the auto-restart function is to resume the same operating mode after the power was turned OFF as when the unit was operating. |
| Turning OFF power | <p>When you have to turn OFF the power supply in order to carry out maintenance, make sure to turn the remote control's ON/OFF switch OFF firstly.</p> <p>If you turn OFF the power supply while the remote control's ON/OFF switch is still ON, the "auto-restart function" automatically starts the indoor fan immediately or the outdoor unit fan starts automatically 3 min after the power supply is turned back ON.</p> |

1.17 Using Conditions for Remote Control Thermostat

Applicable units

All units

Wired remote controls

The remote control thermostat is only available in wired remote controls.

Conditions in which the rem. contr. thermostat is not used

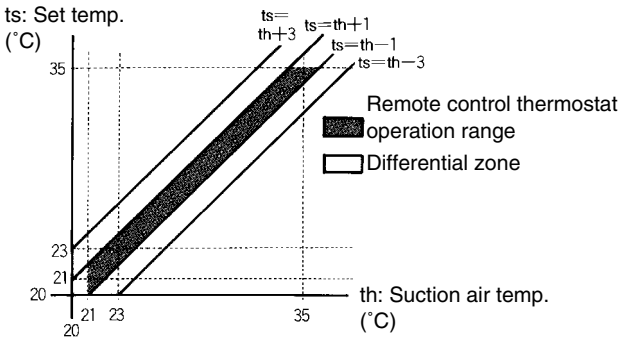
Even when the “use remote control thermostat” is selected in service mode, the remote control thermostat is not always used.

The table below contains the conditions in which the remote control thermostat is not used.

| Condition | The remote control thermostat is not used when... | Except... |
|-----------|---|--|
| 1 | The remote control thermostat malfunctions. | — |
| 2 | The “one remote control group control” is selected. | For simultaneous ON/OFF operation. |
| 3 | The set temp./air suction temp. combination is out of range. See further in this section. | When the automatic operation is selected. If so, the remote control can be used. |

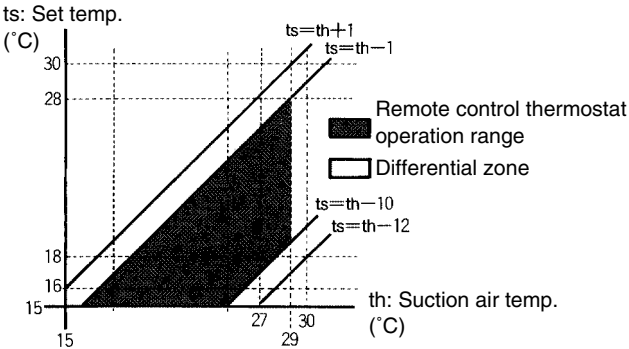
Cooling

The diagram below shows the operation range of the set temperature/air suction temperature combination.



Heating

The diagram below shows the operation range of the set temperature/air suction temperature combination.



2

2 Overview of the cooling mode functions

2.1 What Is in This Chapter?

Introduction This chapter contains information on the functions used to control the system when the system is in cooling mode. Understanding these functions is vital when diagnosing a malfunction that is related to the functional control.

Overview This chapter contains the following topics:

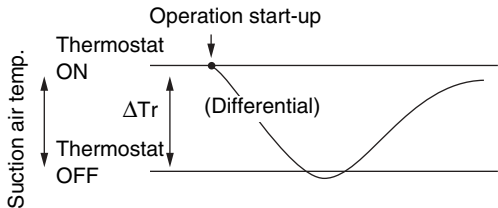
| Topic | See page |
|---|----------|
| 2.2–Dry Keep Mode | 2–26 |
| 2.3–Freeze-Up Function in Cooling or Dry Keep | 2–27 |
| 2.4–Outdoor Fan Starting Control in Cooling or Dry Keep Mode | 2–30 |
| 2.5–Normal Outdoor Fan Control in Cooling Operation | 2–32 |
| 2.6–Low Outside Temperature Control in Cooling Operation (Year Round Cooling) | 2–33 |
| 2.7–High Pressure Protection Control in Cooling Operation | 2–34 |
| 2.8–Condensation Avoidance Control | 2–35 |

2.2 Dry Keep Mode

Applicable units All units

Purpose The purpose of the dry keep mode is to remove humidity while maintaining the room temperature.

Method The points of thermostat ON or OFF are determined according to the suction air temperature at start-up of the unit operation. The set temperature and flow rate are not displayed on the remote control.



Thermostat When dry keep is selected on the remote control, the unit detects the ambient temperature. This ambient temperature is then the setpoint. The thermostat is turned OFF when the air return temperature drops below this setpoint. The thermostat is turned ON in one of the following conditions:

| Suction air temperature | Thermostat ON | ΔTr |
|-------------------------|---------------|-------|
| Tr ≥ 24°C | Tr | 1.5°C |
| 18°C ≤ Tr < 24°C | Tr | 1.0°C |
| Tr < 18°C | 18°C | |

Operation condition The table below describes the operation condition.

| Compressor condition | ON | OFF |
|--|-----------|--------------------|
| Fan speed | L | OFF |
| Flap angle | Set angle | PoO |
| Air flow direction set with remote control | | Setting indication |

Used input The dry keep function uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|----------------------------|--------------------------|---------------------------|
| indoor air temperature R1T | X19A | — |

2.3 Freeze-Up Function in Cooling or Dry Keep

Applicable units

- R(Y)P71-250B
- FHYCP, FHYBP, FDYP, FUYP, FAYP and FHYKP

Starting conditions

In order to avoid formation of ice on the indoor heat exchanger in cooling and dry mode, the system automatically starts up a freeze-up cycle when a number of specific conditions are fulfilled.

Starting conditions 1

- The compressor has been running for less than **A** min.
- The integral cooling capacity decreases for 200 s continuously (see integral capacity calculation further in this section).
- $T_e < -1^{\circ}\text{C}$ for 1 min continuously (0°C for FAY indoor units).

Starting conditions 2 (FAYP indoor units)

- The compressor has been running for more than **A** min.
- The integral cooling capacity decreases for **B** s continuously and $T_e < F^{\circ}\text{C}$ for 1 min continuously (see integral capacity calculation further in this section), **or**
 $T_e < -1^{\circ}\text{C}$ for 1 min continuously.

Starting conditions 2 (not-FAYP indoor units)

- The compressor has been running for more than **A** min.
- The integral cooling capacity decreases for **B** s continuously (see integral capacity calculation further in this section).
- $T_e < C^{\circ}\text{C}$ for 1 min continuously.

Starting condition 3

- $T_e < D^{\circ}\text{C}$ for **E** min accumulated.

Starting conditions 4

- The compressor has been running for more than 1 min continuously while $T_e \leq -5^{\circ}\text{C}$.
- Compressor ON \rightarrow OFF.

Starting conditions 5

- The compressor has been running for more than 8 min continuously while the outdoor ambient temp. $< -2.9 \times \text{room temp.} + 79^{\circ}\text{C}$.
- The compressor has been running for more than 8 min continuously while $T_e < -5^{\circ}\text{C}$ for 1 min continuously.

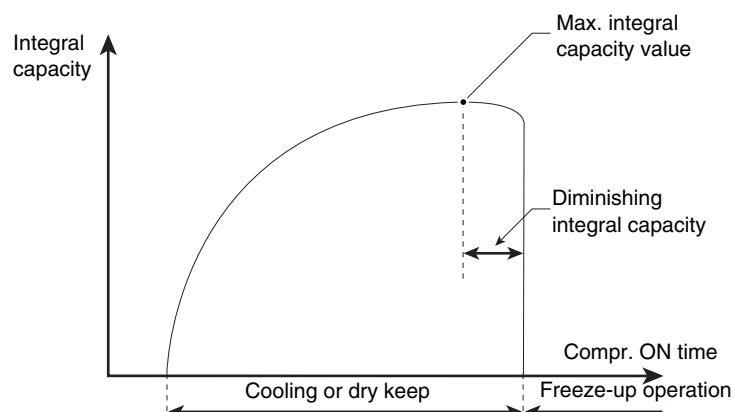
A, B, C, D, E and F

The table below contains the values of A, B, C, D, E and F in function of the DIP switch settings on the outdoor PCB.

| Mode | DIP switch | | A | B | C | D | E | F |
|------|------------|-----|--------|-------|----------------------|----------------------|--------|----------------------|
| | 2-3 | 2-4 | | | | | | |
| 0 | OFF | OFF | 20 min | 100 s | -1°C | -1°C | 25 min | 0°C |
| 1 | ON | | | | | | | |
| 2 | OFF | ON | 8 min | 0 s | 0°C | $+1^{\circ}\text{C}$ | 15 min | |
| 3 | ON | | 5 min | | $+2^{\circ}\text{C}$ | $+3^{\circ}\text{C}$ | | $+2^{\circ}\text{C}$ |

Integral capacity

The illustration below shows the integral capacity in function of the compressor running time.

**Mode 0****Intelligent control mode**

When the DIP switches are in mode 0, “intelligent freeze-up prevention control” determines the freeze-up activation. The outdoor unit can determine the freeze-up activation.

Mode 1**Disabled intelligent control mode**

The table below contains the freeze-up conditions, these are the same as for the Sky Air G- and K-series.

| Condition (OR) | Evap. temp. | Timers | Remarks |
|----------------|-------------|---|----------------------------------|
| 1 | -1°C | 40 min compressor accumulated time | — |
| 2 | -3°C | $T_e \leq -3^\circ\text{C}$ for 1 min continuously after minimum 8 min of operation | Only for FHYP |
| 3 | -5°C | $T_e \leq -5^\circ\text{C}$ for 1 min continuously after minimum 8 min of operation | For indoor units other than FHYP |

Mode 2**Added countermeasure to avoid ice/water blow out during freeze-up cycle.**

Mode 2 enables the possibility to start a freeze-up activation decision by the outdoor unit, but with more severe conditions than in mode 0.

| Model | Used in case of... |
|----------------|--|
| FAY | Reverse angle installation for water drain flow. |
| 4-way cassette | 2- or 3-way air outlet. |

Mode 3**Mode 3 is used in case mode 2 is insufficient as countermeasure.**

Ending condition

The table below contains the freeze-up operation ending conditions.

| In case of... | The freeze-up operation is ended when... |
|----------------|--|
| Mode 0, 2 or 3 | Te > +10°C for 10 min continuously |
| Mode 1 | Te > +7°C for 10 min continuously |

Heating operation during freeze-up

Heating operation activation during freeze-up activation is possible.

2.4 Outdoor Fan Starting Control in Cooling or Dry Keep Mode

Applicable units

- R(Y)P71-250B
- R35-45EZ7V11
- RY35-45E(A)Z7V1

Purpose

The purpose is to avoid that the discharge pressure would start to rise, and stop the unit.

Unit specifications: R35-45EZ7V11 and RY35-45E(A)Z7V1

- R35-45EZ7V11 has a mechanical thermostat.
- RY35-45E(A)Z7V1 has an air thermistor and a low-high speed shift.

Method: R35-45EZ7V11 and RY35-45E(A)Z7V1

When the compressor starts, the fan keeps running at starting fan speed (no delay). The fan speed depends on the ambient temperature. The different fan speeds for the according outdoor air temperatures are shown in the table below.

| Operating mode | Outdoor air temperature Ta | Starting fan speed |
|-----------------------------|----------------------------|--------------------|
| Cooling mode, dry keep mode | Ta > 20°C | H speed |
| | Ta < 17°C | L speed |

Method: R(Y)P71-250B

When the compressor starts, the fan keeps running for 3 min at starting fan speed. The starting fan speed depends on the ambient temperature. The different fan speeds for the according outdoor air temperatures are shown in the table below.

| Operating mode | Outdoor air temp. Ta | Starting fan speed | See further in this section... |
|-----------------------------|----------------------|--|---|
| Cooling mode, dry keep mode | Ta < 3°C | <ul style="list-style-type: none"> ■ When the compressor is ON for the first 20 s: Fan speed = OFF ■ After 20 s: Fan speed = L speed | Fan speed for Ta < 3°C: R(Y)P71-250B |
| | 3°C ≤ Ta < 10°C | L speed | Different fan speeds |
| | 10°C ≤ Ta < 23°C | H speed | |
| | Ta ≥ 23°C | HH speed | |

Fan speed for Ta < 3°C: R(Y)P71-250B

This fan starting control is made to be able to build up the compression ratio as soon as possible because this has two advantages:

- It is better for the compressor to increase the compression ratio because the lubrication must be done by the pressure difference between low and high pressure.
- The pressure difference is necessary for the h/p models to keep the 4-way valve in its correct position.

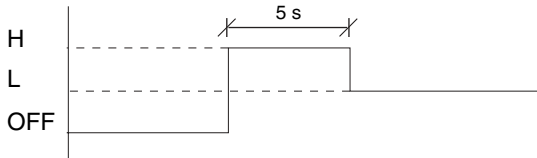
Different fan speeds

The table below explains the meaning of L, H and HH fan speed.

| Fan operation | 71 | 100 and 125 | | 200 and 250 | |
|---------------|-------|-----------------|-----------------|-------------|-------|
| | 1 fan | Upper fan (MF1) | Lower fan (MF2) | Fan 1 | Fan 2 |
| OFF | OFF | OFF | OFF | OFF | OFF |
| L | L | L | L | H | OFF |
| H | H | H | H | H | H |
| HH | HH | HH | HH | H | H |

L-tap starting compensation

When the outdoor fan is operated from OFF to L-tap, the fan motor does not turn, because of lack of starting torque. To avoid this, the fan motor operates at H-tap for the first 5 s after start-up, before changing to L-tap.



Used input

The fan starting control in cooling or dry keep mode uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|-----------------------------|--------------------------|---------------------------|
| Outdoor air temperature R1T | — | X4A |

2.5 Normal Outdoor Fan Control in Cooling Operation

Applicable units R(Y)P71-250B

Purpose The purpose of this normal outdoor fan control is to ensure a correct discharge pressure in function of the outdoor air and indoor room temperature.

Method The table below shows in which conditions the outdoor fan works at low or high speed.

| Condition | Fan Speed |
|--------------------------------|-----------|
| $T_a < 41.7 - 0.84 \times T_r$ | L |
| $T_a > 45.7 - 0.84 \times T_r$ | H |

T_a = ambient temperature = outdoor air temperature; T_r = room suction temperature.

Different fan speeds

The table below explains the meaning of L, H and HH fan speed.

| Fan operation | 71 | 100 and 125 | | 200 and 250 | |
|---------------|-------|-----------------|-----------------|-------------|-------|
| | 1 fan | Upper fan (MF1) | Lower fan (MF2) | Fan 1 | Fan 2 |
| OFF | OFF | OFF | OFF | OFF | OFF |
| L | L | L | L | H | OFF |
| H | H | H | H | H | H |
| HH | HH | HH | HH | H | H |

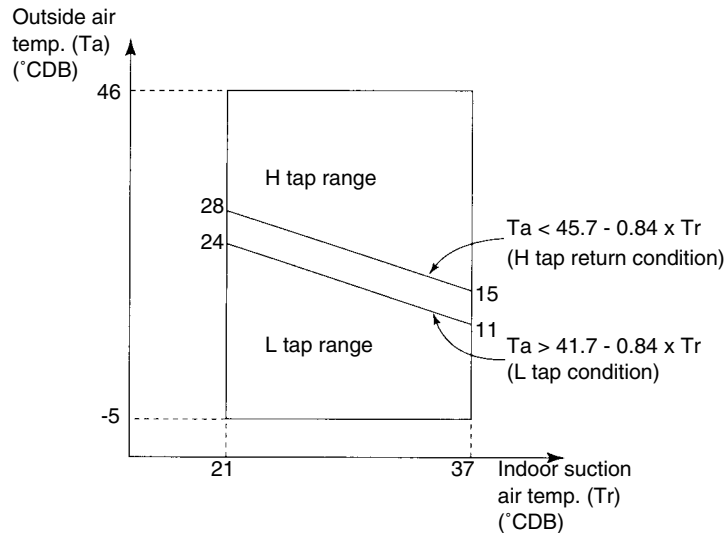
Used input

The normal outdoor fan control during cooling operation uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|-----------------------------|--------------------------|---------------------------|
| Indoor room temperature R1T | X19A | — |
| Outdoor air temperature R1T | — | X4A |

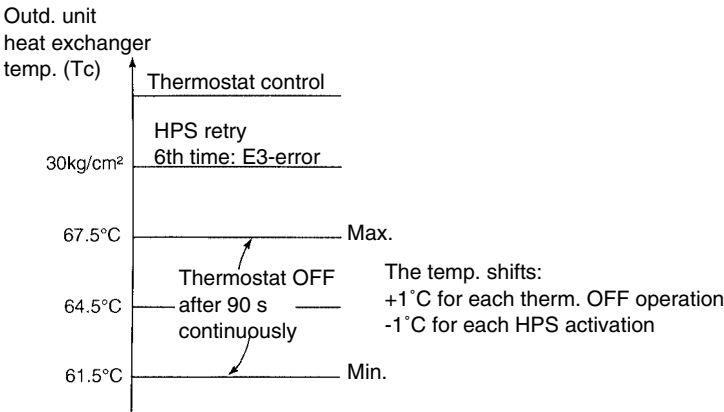
2.6 Low Outside Temperature Control in Cooling Operation (Year Round Cooling)

| | |
|--------------------------------|---|
| Applicable units | R(Y)P71-250 |
| Purpose | <p>The purpose of the control is to prevent freezing of the indoor heat exchanger due to:</p> <ul style="list-style-type: none">■ Drop of the low pressure■ Indoor heat exchanger temperature (Te). |
| Method | <p>The method to control is reduction of the air flow volume of the outdoor unit fan.</p> |
| Starting and ending conditions | <ul style="list-style-type: none">■ The control is not activated during start-up control.■ The control is activated when the outdoor temperature drops below (41.7 - 0.84 x room suction temperature). At this temperature, the outdoor fan speed switches to L-tap.■ The differential for the return condition is 4 K. |



2.7 High Pressure Protection Control in Cooling Operation

| | |
|------------------|--|
| Applicable units | R(Y)P71-250B |
| Purpose | The purpose of the high pressure protection is to prevent a shutdown due to an error. |
| Method | The thermostat turns OFF immediately before HPS activation according to the outdoor heat exchanger temperature (Tc). |



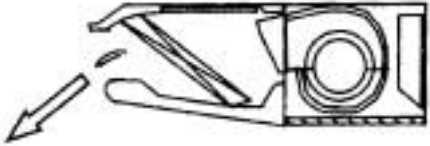

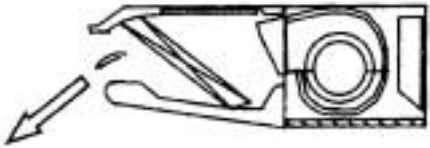
2.8 Condensation Avoidance Control

Applicable units FHYP

Operating modes Regardless of whether the thermostat is ON or OFF, the condensation avoidance control can function in the following operating modes:

- Cooling (automatic), or
- Dry keep.

Method To avoid condensation on the swing flap, the condensation avoidance control is activated:

| Stage | Description |
|-------|--|
| 1 | <p>The fan operates in cooling mode with the blade in downward position (set on the remote control).</p>  |
| 2 | <p>After 30 min, the blade moves to a horizontal position. However, the remote control still shows the downward position.</p>  |
| 3 | <p>After 1 h operation in horizontal position, the blade moves back to its downward position for 30 min.</p>  |
| 4 | <p>The unit operation is reset by:</p> <ul style="list-style-type: none">■ Changing the operating mode into “heating” or “fan”, or■ Changing the air flow direction, or■ Turning the unit operation ON or OFF. |

2

3 Overview of the heating mode functions

3.1 What Is in This Chapter?

Introduction This chapter contains information on the functions used to control the system during heating mode. Understanding these functions is vital when diagnosing a malfunction that is related to the functional control. This chapter is only applicable to h/p units.

Overview This chapter contains the following topics:

| Topic | See page |
|--|----------|
| 3.2-Defrost Control | 2-38 |
| 3.3-Draft Avoidance Control 1 | 2-41 |
| 3.4-Draft Avoidance Control 2 | 2-43 |
| 3.5-Outdoor Unit Identification Function | 2-44 |
| 3.6-4-way Valve Control | 2-45 |
| 3.7-Starting Outdoor Fan Control in Heating Mode | 2-46 |
| 3.8-Normal Outdoor Fan Control in Heating Mode | 2-47 |
| 3.9-Motor Operated Valve Control | 2-49 |

3.2 Defrost Control

Applicable units

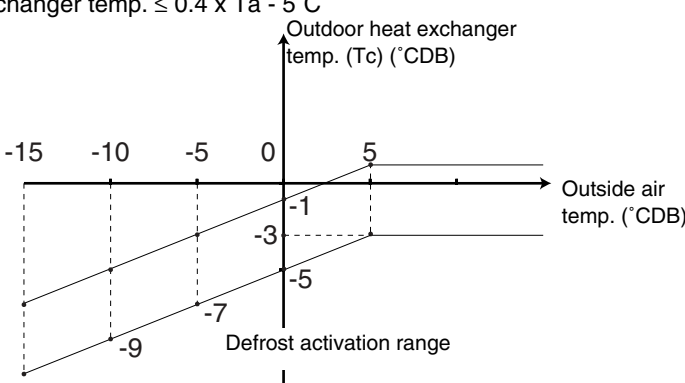
- RY35-45E(A)Z7V1
- RYP71-250B

Purpose

The purpose of the defrost control is to prevent frost on the outdoor heat exchanger coil. This frost forms when the unit is in heating position.

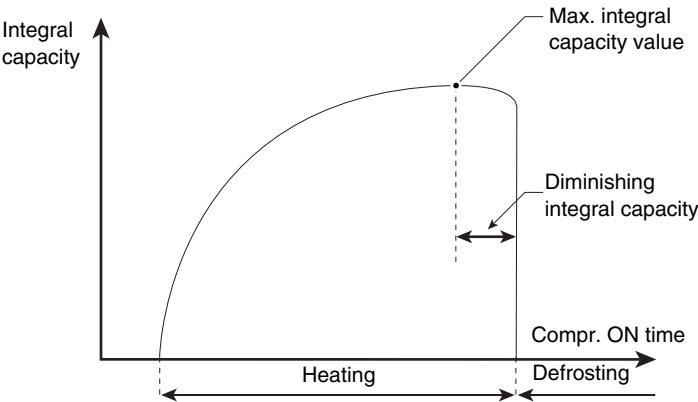
Starting conditions: RYP71-250B

The defrosting starts when either condition 1 or 2 has been realized.

| Condition 1 | Condition 2 |
|---|---|
| The compressor has been running for a total of 25 min since the start of heating or since the end of the previous defrosting. | |
| <div><div><div>■ Outdoor heat exchanger temp. $\leq -3^{\circ}\text{C}$, and</div><div>■ Outdoor heat exchanger temp. $\leq 0.4 \times \text{Ta} - 5^{\circ}\text{C}$</div></div><div></div></div> | |
| <div><div>■ Compressor ON ≥ 5 min continuously, and integral heating capacity diminishes (see further in this section), or</div><div>■ Ta $> -5^{\circ}\text{C}$ for 3 h accumulated (if DS1-2 is ON, 40 min; if DS2-1 is ON, 24 h), or</div><div>■ Ta $\leq -5^{\circ}\text{C}$ for 6 h accumulated</div></div> | Above condition for 10 min accumulated. |
| Outdoor fan is ON (not in overload control) | Outdoor fan is OFF (overload control) |

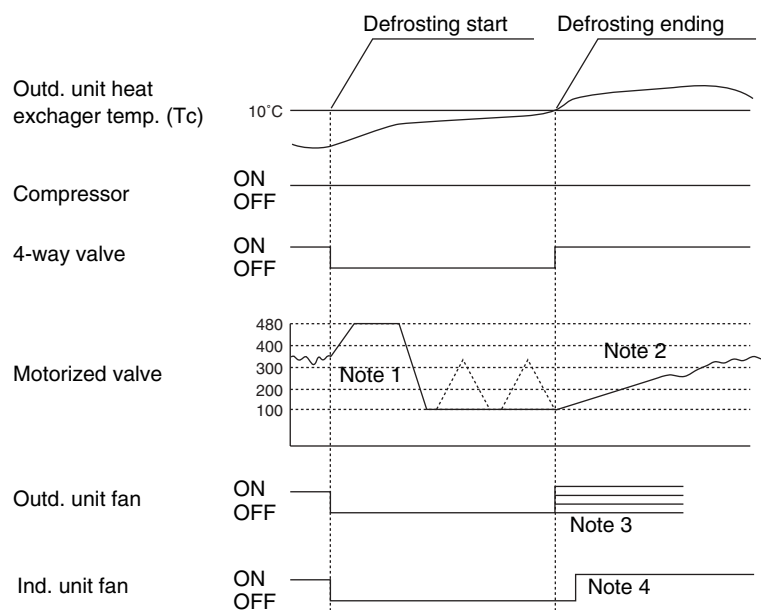
Heating integral capacity

The integral heating capacity is calculated by using the indoor unit data (R2T - R1T) divided by the compressor running time.



Defrost control RYP71-250B

The illustration below shows the defrost control.



| Note | Control and time | Description |
|------|--|--|
| 1 | Motorized valve control during defrost operation | After a defrost activation, the defrost motorized valve is at 480 pulses for a certain amount of time, and is then closed gradually to 100 pulses. Only when the discharge pipe temperature is high during defrost, the motorized valve opens at intervals. |
| 2 | Motorized valve control after defrost operation | The motorized valve is controlled to an optimum opening and the most suitable operating speed, according to the operating conditions at defrost activation. |
| 3 | Outdoor unit fan after defrost operation | The fan operates at optimum fan tap, according to the operating conditions at defrost activation. |
| 4 | Hot start after defrost | The unit remains in the hot start standby (indoor unit fan OFF) mode for: <ul style="list-style-type: none"> ■ 40 s after defrost ending, or ■ Until the indoor heat exchanger temperature increases. |

Defrost ending RYP71-250B

The defrost operation ends:

- After 10 min, or
- As soon as one of the following conditions is met after 1 min or more:
 - Outdoor heat exchanger temp. $\geq 10^{\circ}\text{C}$
 - Discharge pipe temp. $> 120^{\circ}\text{C}$.

Starting and ending conditions: RY35-45E(A)Z7V1

Starting conditions

The defrosting starts when all of the following conditions are fulfilled:

- The compressor has been running over 40 min
- If $T_a \geq 5^\circ\text{C}$, outdoor heat exchanger temperature $< -3^\circ\text{C}$
- Outdoor heat exchanger temperature $< (T_a \times 0,4) - 5^\circ\text{C}$.

Ending conditions

The defrosting stops when one of the following conditions is fulfilled:

- Defrosting has been running over 10 min, or
- Outdoor heat exchanger temperature $> 12.5^\circ\text{C}$, or
- High-pressure switch has been activated, or
- Indoor unit has been switched OFF, or
- Unit is in another mode than heating.

Hot start after defrosting

The hot start function is activated:

- 40 s after the defrosting ending, or
- When $T_c > 34^\circ\text{C}$ (indoor heat exchanger temperature).

Used input

The defrost control uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|--|--------------------------|---------------------------|
| Outdoor thermistor | — | R1T |
| Outdoor heat exchanger thermistor | — | R2T |
| Discharge pipe thermistor | — | R3T |
| Defrosting start temperature changeover switch | — | DS1-2 |
| Defrosting forced time changeover switch | — | DS2-1 |

3.3 Draft Avoidance Control 1

Applicable units

The draft avoidance control 1 is applicable for the following units:

| Model type | Model name |
|------------|----------------|
| Cassette | FHYCP and FUYP |
| Corner | FHYKP |
| Ceiling | FUYP |
| Wall | FAYP |

Purpose

The purpose of the draft avoidance control 1 is to avoid draft, which is very uncomfortable for the end users.

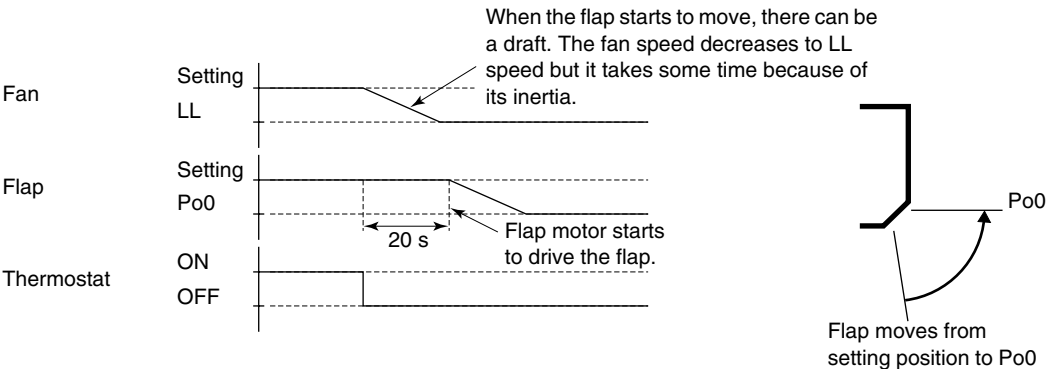
Method

The draft avoidance control 1 delays the moving of the flap setting to the Po0 position (= upper) for a certain amount of time in the following conditions:

- In heating mode and thermostat OFF, or
- In defrosting.

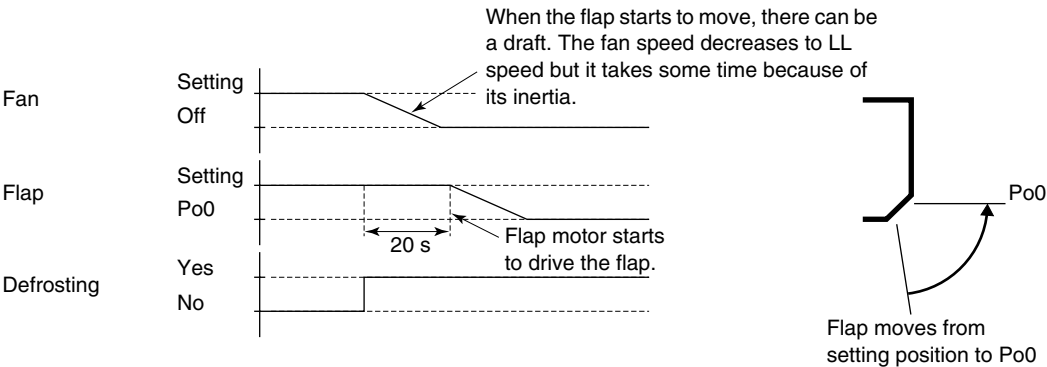
Heating mode and thermostat OFF

The time chart below illustrates the draft avoidance control 1 in heating mode and thermostat OFF.



Defrosting

The time chart below illustrates the draft avoidance control 1 in defrosting.



Used inputs

The draft avoidance control 1 uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|--|--------------------------|---------------------------|
| Limit switch for flap | 33S | — |
| No. of fan turns | X26A | — |
| Outdoor heat exchanger thermistor (start and end defrosting) | — | R2T |

3.4 Draft Avoidance Control 2

Applicable units

The draft avoidance control 2 is applicable for the following units:

| Model type | Model name |
|------------|----------------|
| Cassette | FHYCP and FUYP |
| Corner | FHYKP |
| Ceiling | FUYP |
| Wall | FAYP |

Purpose

The purpose of the draft avoidance control 2 is to avoid draft when the flap is moving.

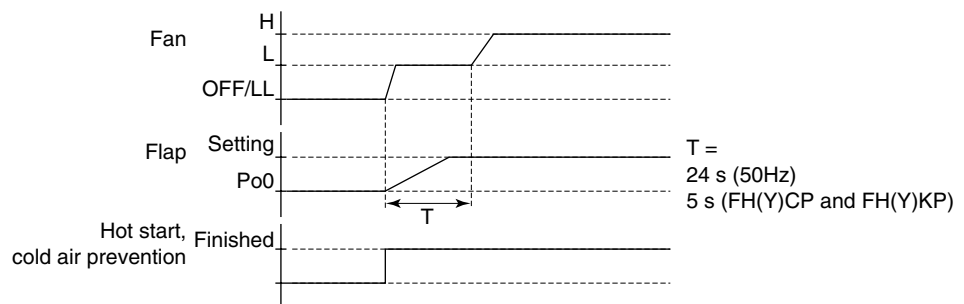
Starting conditions

The draft avoidance control 2 is activated when:

- Hot start is finished, or
- Cold air prevention control is finished.

Time chart

If the fan speed is set to "H", the fan turns at low speed for a certain amount of time.



Used input

Draft avoidance control 2 uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|-----------------------|--------------------------|---------------------------|
| Limit switch for flap | 33S | — |
| No. of fan turns | X26A | — |

3.5 Outdoor Unit Identification Function

Applicable units

The outdoor unit identification function is applicable for the following units:

| Model type | Model name |
|------------|----------------|
| Cassette | FHYCP and FUYP |
| Corner | FHYKP |
| Ceiling | FUYP |
| Wall | FAYP |
| Duct | FDYP and FHYBP |

Purpose

The purpose of the outdoor unit identification function is to enable the indoor unit to automatically determine which operating mode has to be set in function of the outdoor unit type (c/o or h/p).

Operating modes

The possible operating modes are:

| Outdoor unit | Operating modes |
|--------------|---|
| h/p | <ul style="list-style-type: none"> ■ Fan ■ Cooling ■ Dry keep ■ Heating |
| c/o | <ul style="list-style-type: none"> ■ Fan ■ Cooling ■ Dry keep |

Used input

The outdoor unit identification function uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|-------------|--------------------------|---------------------------|
| Indoor PCB | TC & RC | — |
| Outdoor PCB | — | TC & RC |

TC: Transmission circuit

RC: Receiving circuit

3.6 4-way Valve Control

Applicable units RYP71-250B

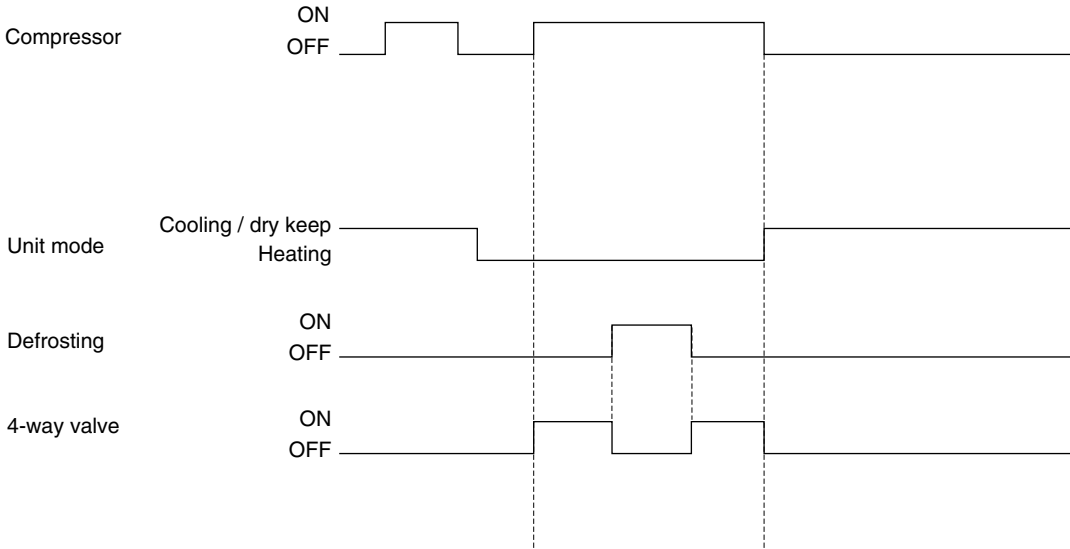
Purpose The purpose of the 4-way valve control is to control how the superheated refrigerant passes through the 4-way valve. The 4-way valve control carries out the changeover switching of the 4-way valve. This changeover switching is only carried out during operation, because pressure difference is required to move the internal cylinder.

| When... | Then the 4-way valve connects the outlet of the compressor with... |
|---------|--|
| Cooling | Outdoor heat exchanger. |
| Heating | Indoor heat exchanger. |

Method The table below describes the 4-way valve control operation.

| In... | The 4-way valve is... |
|---|-----------------------|
| Heating, except for defrosting | ON |
| ■ Cooling ■ Dry keep ■ Defrosting | OFF |

Time chart The time chart below illustrates the 4-way valve control.



Used input The 4-way valve control uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|--|--------------------------|---------------------------|
| Indoor air temperature R1T (auto changeover) | X19A | — |
| Outdoor heat exchanger temperature R2T (defrost) | — | X5A |

3.7 Starting Outdoor Fan Control in Heating Mode

2

Applicable units

RYP71-250B

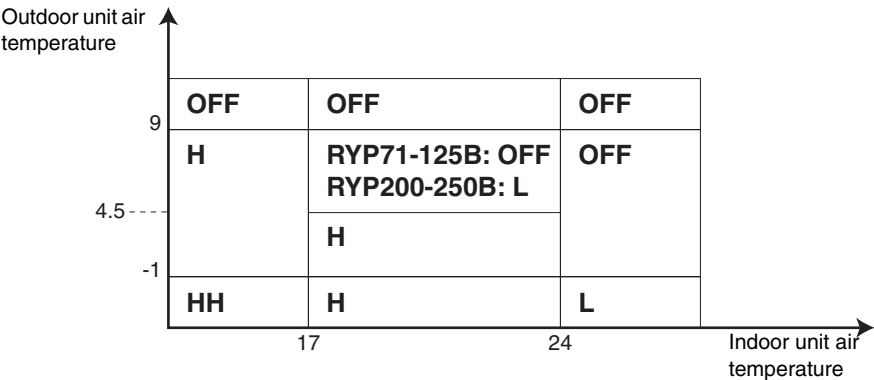
Purpose

The purpose of the starting outdoor fan control is to control the fan speed in function of the indoor and outdoor unit air temperature.

Method

The illustration below shows the fan starting control in heating mode.

- LPS is not detected for 3 min after start-up.
- The starting fan speed lasts 5 min. When the outside temperature is 10°C or lower, the fan speed stays at H for the first 5 s if it is switched from OFF to L.



Different fan speeds

The table below explains the meaning of L, H and HH fan speed.

| Fan operation | 71 | 100 and 125 | | 200 and 250 | |
|---------------|-------|-----------------|-----------------|-------------|-------|
| | 1 fan | Upper fan (MF1) | Lower fan (MF2) | Fan 1 | Fan 2 |
| OFF | OFF | OFF | OFF | OFF | OFF |
| L | L | L | L | H | OFF |
| H | H | H | H | H | H |
| HH | HH | HH | HH | H | H |

Used input

The outdoor fan starting control in heating mode uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|--------------------|--------------------------|---------------------------|
| Outdoor thermistor | — | R1T |
| Suction thermistor | R1T | — |

3.8 Normal Outdoor Fan Control in Heating Mode

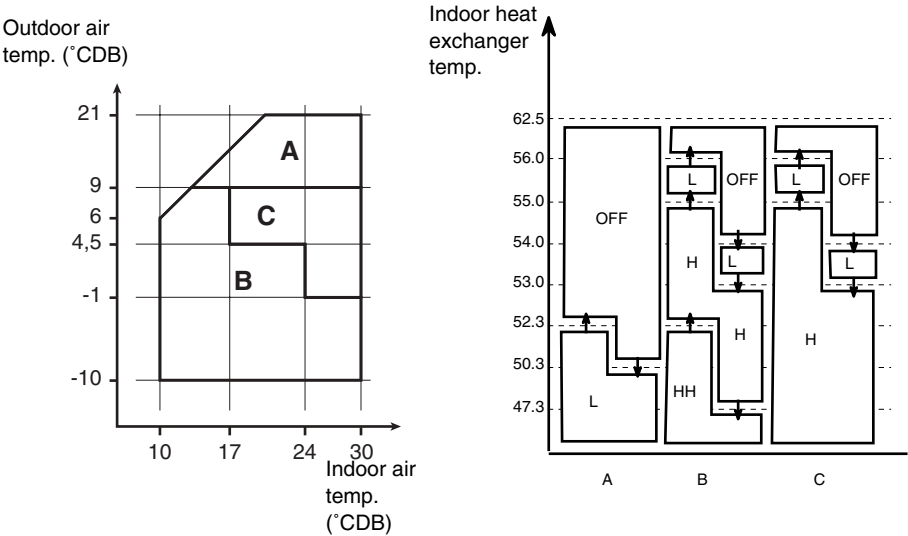
Applicable units RYP71-250B

Purpose The purpose of the normal outdoor fan control is to:

- Reduce the chance of overload during high ambient temperature.
- Reduce the chance of icing up.

Method Normal fan control operation is done after 5 min of starting fan control operation.

The operation range is divided into three areas (A, B and C).



Example For area A, the fans go:

- From L speed to OFF at 52.3°C
- From OFF to L speed at 50.3°C.

Different fan speeds

The table below explains the meaning of L, H and HH fan speed.

| Fan operation | 71 | 100 and 125 | | 200 and 250 | |
|---------------|-------|-----------------|-----------------|-------------|-------|
| | 1 fan | Upper fan (MF1) | Lower fan (MF2) | Fan 1 | Fan 2 |
| OFF | OFF | OFF | OFF | OFF | OFF |
| L | L | L | L | H | OFF |
| H | H | H | H | H | H |
| HH | HH | HH | HH | H | H |

Used input

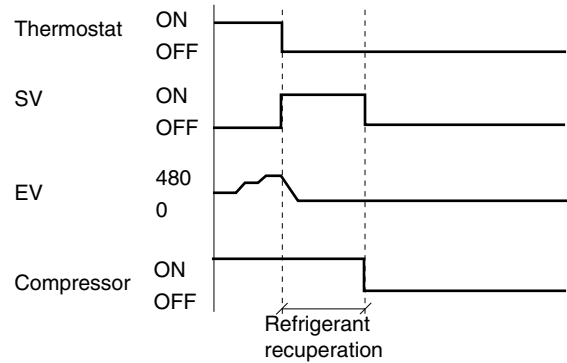
The normal outdoor fan control during heating operation uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|----------------------------------|--------------------------|---------------------------|
| Outdoor thermistor | — | R1T |
| Suction thermistor | R1T | — |
| Indoor heat exchanger thermistor | R2T | — |

3.9 Motor Operated Valve Control

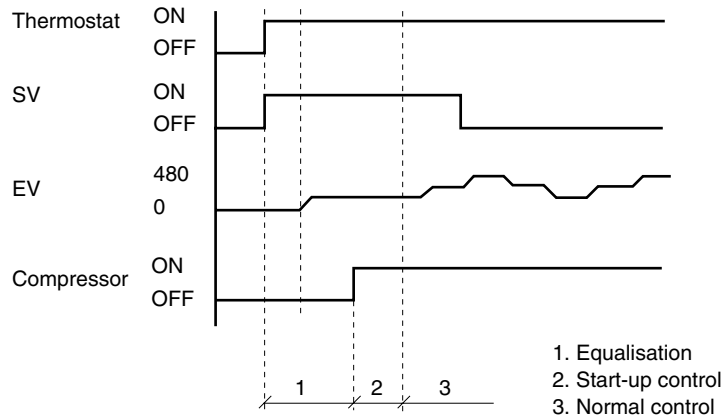
Applicable units R(Y)P71-250B

Pump down residual operation The unit conducts a pump down residual operation after each compressor stop command. The purpose of this function is to collect the refrigerant in the liquid receiver in order to prevent refrigerant from remaining in the indoor heat exchanger.



Start-up control When the compressor starts, a pump down operation is carried out in order to avoid liquid pumping. The liquid receiver fills up and a minimum refrigerant amount is passed to the compressor. This minimum refrigerant amount is required to avoid discharge pipe temperatures that are too high.

The opening degree of the expansion valve depends on the start-up number. If the first start-up fails, the opening degree of the following start-up is adapted by the self-learning function.



Initial opening degree The initial opening degree of the outdoor expansion valve depends on the indoor and outdoor air temperature. The calculation of the opening degree is made at a thermostat ON and at the end of a defrosting cycle.

Opening degree: Self-learning function When the system was stopped due to abnormal suction or discharge pressure, or due to a discharge temperature that is too high, the expansion valve control tries to avoid the same breakdown. The expansion valve increases the previous opening degree with 70 (in cooling mode) or 80 (in heating mode) pulses at the next start-up.

There are maximum five start-up attempts. When the compressor stops again after the fifth start-up, something is wrong with the unit and a unit check is necessary. The relevant error code appears on the remote control.

Normal control

The optimum discharge pipe temperature is calculated based on:

- Indoor and outdoor heat exchanger temperature
- Actual discharge pipe temperature
- Outdoor ambient temperature.

The expansion valve is controlled in order for the discharge temperature to approach the optimum temperature.

Used input

The motor operated valve control uses the following inputs:

| Input | Connection on indoor PCB | Connection on outdoor PCB |
|-----------------------------------|--------------------------|---------------------------|
| Outdoor thermistor | — | R1T |
| Outdoor heat exchanger thermistor | — | R2T |
| Discharge pipe thermistor | — | R3T |
| Indoor heat exchanger thermistor | R2T | — |

Part 3

Troubleshooting

What is in this part?

This part contains the following chapters:

| Chapter | See page |
|---|----------|
| 1–Troubleshooting | 3–3 |
| 2–Error Codes: Indoor Units | 3–21 |
| 3–Error Codes: Outdoor Units | 3–33 |
| 4–Error Codes: System Malfunctions | 3–53 |
| 5–Additional Checks for Troubleshooting | 3–65 |

3

1 Troubleshooting

1.1 What Is in This Chapter?

Introduction

When a problem occurs, you have to check all possible malfunctions. This chapter gives a general idea of where to look for malfunctions.

Not all repair procedures are described. Some procedures are considered common practice.

Overview

This chapter contains the following topics:

| Topic | See page |
|---|----------|
| 1.2—Overview of General Problems | 3-4 |
| 1.3—Emergency Operation and Checking with the Wired Remote Control | 3-6 |
| 1.4—Checking with the Infrared Remote Control Display | 3-7 |
| 1.5—Troubleshooting with the Indoor Unit LEDs and the Remote Control | 3-11 |
| 1.6—Troubleshooting with the Outdoor Unit LEDs and the Remote Control: Outdoor Malfunctions | 3-12 |
| 1.7—Troubleshooting with the Outdoor Unit LEDs and the Remote Control: System Malfunctions | 3-13 |
| 1.8—Overview of the Indoor Safety Devices | 3-14 |
| 1.9—Overview of the Outdoor Safety Devices | 3-15 |
| 1.10—Outdoor Safety Device: Thermal Protector Fan Motor | 3-16 |
| 1.11—Outdoor Safety Device: Overcurrent Relay Compressor | 3-17 |
| 1.12—Outdoor Safety Device: Reverse Phase Protector | 3-18 |
| 1.13—Outdoor Safety Device: High-Pressure Switch | 3-19 |
| 1.14—Outdoor Safety Device: Low-Pressure Switch | 3-20 |

1.2 Overview of General Problems

Introduction

The general problems are:

- None of the indoor units operates
- Equipment operates but stops sometimes
- Some indoor units do not operate (twin / triple)
- Equipment operates but is not able to cool
- Abnormal operating noise and vibrations
- Equipment does not operate (operation light OFF)
- Poor cooling or heating
- Operation stops suddenly (operation light flashes)
- Abnormal functioning.

None of the indoor units operates

To troubleshoot, check the following:

- Make sure the rated voltage is supplied.
- Make sure the indoor unit type is compatible with the outdoor unit.
- Troubleshoot with the indoor unit LEDs. See page 3-11.
- Troubleshoot with the outdoor unit LEDs. See page 3-12 and 3-13.
- Make sure the address for the remote control and indoor unit are set correctly. See page 4-5.

Equipment operates but stops sometimes

To troubleshoot, check the following:

- A power failure of 2 to 10 sine wave cycles can stop air conditioner operation.
- Cooling operation cannot be used when the outside temperature is below 0°C.
- Troubleshoot with the indoor unit LEDs. See page 3-11.
- Troubleshoot with the outdoor unit LEDs. See page 3-12 and 3-13.

Some indoor units do not operate (twin / triple)

To troubleshoot, check the following:

- Make sure the indoor unit type is compatible with the outdoor unit.
- Troubleshoot with the indoor unit LEDs. See page 3-11.
- Troubleshoot with the outdoor unit LEDs. See page 3-12 and 3-13.

Equipment operates but is not able to cool

To troubleshoot, check the following:

- Make sure the thermistor has not disconnected from the pipe holder.
- Troubleshoot with the indoor unit LEDs. See page 3-11.
- Troubleshoot with the outdoor unit LEDs. See page 3-12 and 3-13.
- Check for gas shortage. See page 3-54.

Abnormal operating noise and vibrations

Make sure the required space for installation is provided. See chapters “General Outline: Indoor Units” and “General Outline: Outdoor Units”.

Equipment does not operate (operation light OFF)

To troubleshoot, check the following:

- Check if the breaker has switched OFF or the fuse has blown.
- Check if the batteries are placed in the remote control.
- Check if the address switch is set correctly. See page 4–5.
- Check if the timer is set correctly.

Poor cooling or heating

To troubleshoot, check the following:

- Check if the filters are clean.
- Check if there is no obstruction of the air inlet or outlet of the indoor and outdoor units.
- Check if the temperature settings are correct.
- Check if all windows and doors are closed.
- Check if the air flow and air direction are set correctly.
- Check if there is no ventilation operation.

Operation stops suddenly (operation light flashes)

To troubleshoot, check the following:

- Check if the air filters are clean.
- Check if there is no obstruction of the air inlet or outlet of the indoor and outdoor units.

The operation light flashes when the following errors are detected:

- Activation of a safety device or malfunctioning thermistors.
- Transmission error between the indoor and the outdoor unit.

Abnormal functioning

The air conditioner may malfunction due to lightning or radio waves. To check, proceed as follows:

| Step | Action |
|------|---|
| 1 | Switch OFF the breaker. |
| 2 | Switch it back ON. |
| 3 | Check the operation by trying to operate with the remote control. |

1.3 Emergency Operation and Checking with the Wired Remote Control

Emergency operation

When the remote control is not available or its battery is dead, you can use the emergency button on the front panel of the indoor unit :

- To start the automatic mode, press the emergency button.
- To stop the automatic mode, press the button again.

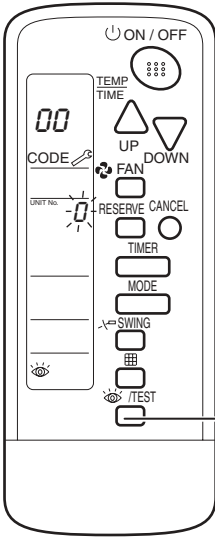
Checking with the wired remote control

If the operation stops due to a malfunction, the remote control's operation LED flashes, and the remote control displays the error code. The error code helps you to troubleshoot. See page 3-11, 3-12 and 3-13.

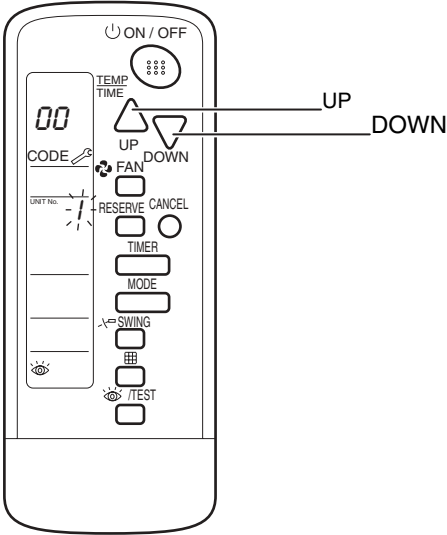
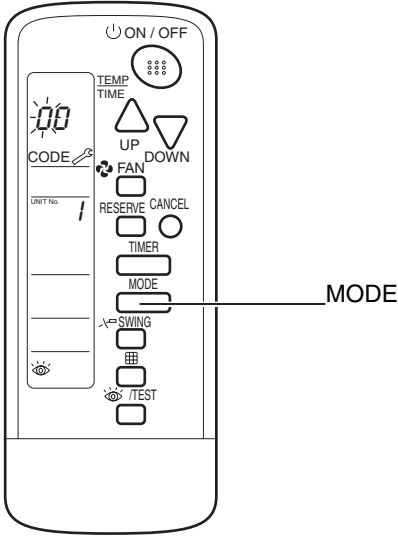
1.4 Checking with the Infrared Remote Control Display

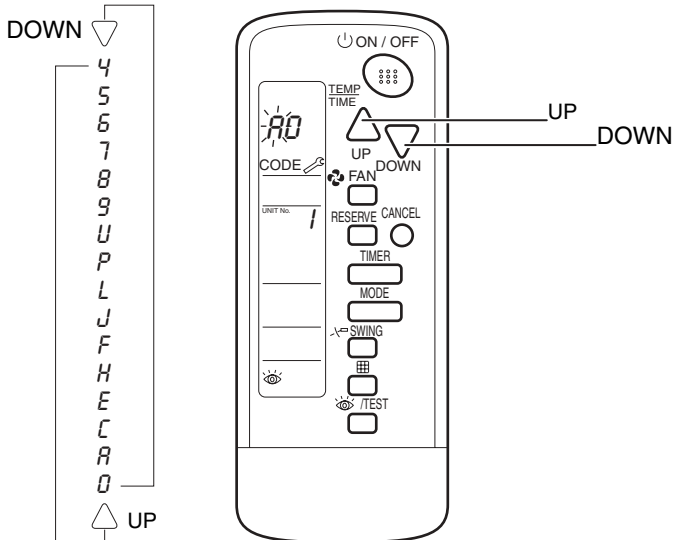
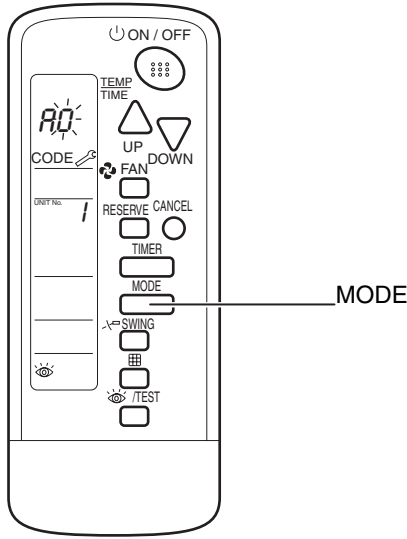
Introduction Contrary to the wired remote control, the infrared remote control does not display the error code. Instead, the operation LED on the light reception section flashes.

Checking To find the error code, proceed as follows:

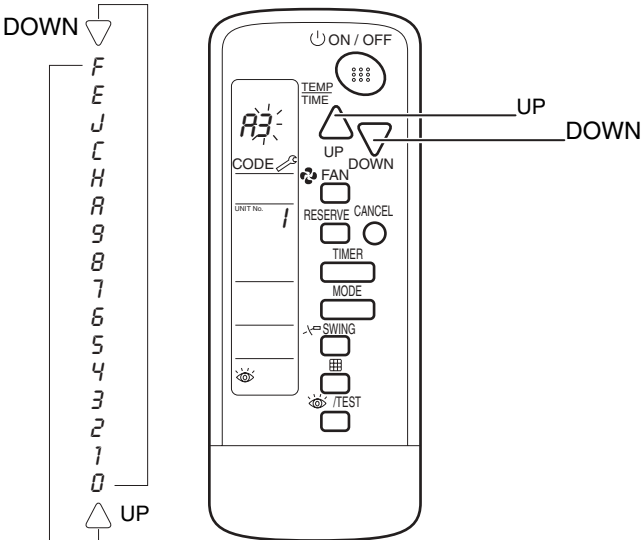
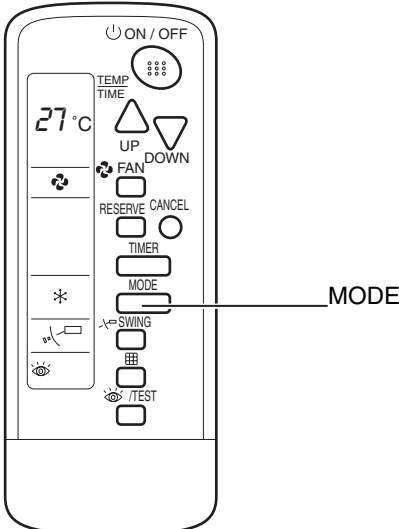
| Step | Action |
|------|---|
| 1 | <p>Press the INSPECTION/TEST button to select “inspection”. The equipment enters the inspection mode. “0” flashes in the UNIT No. display.</p> <div><p>INSPECTION/TEST</p></div> |

3

| Step | Action | | | | | | | | |
|-------------------|--|----------------|---------|---------------|-------------------------|--------------|---|-------------------|--------------------------|
| 2 | <div>Press the UP or DOWN button and change the UNIT No. until the receiver of the remote control starts to beep.</div> <div></div> <table><tr><th>If you hear...</th><th>Then...</th></tr><tr><td>3 short beeps</td><td>Follow all steps below.</td></tr><tr><td>1 short beep</td><td>Follow steps 3 and 4. Continue the operation in step 4 until you hear a continuous beep. This continuous beep indicates that the error code is confirmed.</td></tr><tr><td>1 continuous beep</td><td>There is no abnormality.</td></tr></table> | If you hear... | Then... | 3 short beeps | Follow all steps below. | 1 short beep | Follow steps 3 and 4. Continue the operation in step 4 until you hear a continuous beep. This continuous beep indicates that the error code is confirmed. | 1 continuous beep | There is no abnormality. |
| If you hear... | Then... | | | | | | | | |
| 3 short beeps | Follow all steps below. | | | | | | | | |
| 1 short beep | Follow steps 3 and 4. Continue the operation in step 4 until you hear a continuous beep. This continuous beep indicates that the error code is confirmed. | | | | | | | | |
| 1 continuous beep | There is no abnormality. | | | | | | | | |
| 3 | <div>Press the MODE selector button. The left "0" (upper digit) indication of the error code flashes.'</div> <div></div> | | | | | | | | |

| Step | Action | | | | | | | | |
|-------------------|--|----------------|---------|---------------|--------------------------|--------------|------------------|-------------------|------------------------------------|
| 4 | <p>Press the UP or DOWN button to change the error code upper digit until the receiver of the remote control starts to beep.</p> <div></div> <table border="1"><thead><tr><th>If you hear...</th><th>Then...</th></tr></thead><tbody><tr><td>2 short beeps</td><td>The upper digit matches.</td></tr><tr><td>1 short beep</td><td>No digits match.</td></tr><tr><td>1 continuous beep</td><td>Both upper and lower digits match.</td></tr></tbody></table> | If you hear... | Then... | 2 short beeps | The upper digit matches. | 1 short beep | No digits match. | 1 continuous beep | Both upper and lower digits match. |
| If you hear... | Then... | | | | | | | | |
| 2 short beeps | The upper digit matches. | | | | | | | | |
| 1 short beep | No digits match. | | | | | | | | |
| 1 continuous beep | Both upper and lower digits match. | | | | | | | | |
| 5 | <p>Press the MODE selector button. The right "0" (lower digit) indication of the error code flashes.</p> <div></div> | | | | | | | | |

3

| Step | Action |
|------|---|
| 6 | <p>Press the UP or DOWN button and change the error code lower digit until the receiver of the remote control generates a continuous beep.</p>  |
| 7 | <p>Press the MODE button to return to normal status. If you do not press any button for at least 1 min, the remote control returns automatically to normal status.</p>  |

1.5 Troubleshooting with the Indoor Unit LEDs and the Remote Control

Shutdown

For some errors, the system only shuts down when the error occurs several times. This means that you have to wait until the system shuts down to be able to see the flashing LED on the front panel and the error code on the remote control.

Malfunction overview

The table below contains an overview of the indoor unit malfunctions.

| If... | | | Then... | | | | |
|-----------------|-----------------|-----------|------------------------|-----------------------------|---------------|---|----------|
| LED front panel | Indoor unit LED | | Remote control display | Location of the malfunction | | Malfunction description | See page |
| | H1P (HAP) | H2P (HBP) | | Other than PCB | PCB ind. unit | | |
| ● | ☀ | ☀ | Note 1 | — | — | Normal | — |
| ☀ | ☀ | ☀ | R1 | — | ○ | Malfunctioning Indoor PCB (R1) | 3-22 |
| | ☀ | ● | | | | | |
| | ☀ | — | | | | | |
| | ● | — | | | | | |
| | ☀ | ☀ | R3 | ⊙ | — | Malfunctioning Drain Water Level System (R3) | 3-23 |
| | | | R6 | ⊙ | □ | Indoor Unit Fan Motor Lock (R6) | 3-25 |
| | | | RF | ⊙ | ○ | Malfunctioning Drain System (RF) | 3-27 |
| | | | RJ | ⊙ | ○ | Malfunctioning Capacity Setting (RJ) | 3-28 |
| | | | C4, or C9 | ⊙ | □ | Thermistor Abnormality (C4 or C9) | 3-30 |
| | | | CJ | ⊙ | ○ | Malfunctioning Remote Control Air Thermistor (CJ) | 3-32 |

Symbols and notes

































The table below describes the symbols and notes used in the malfunction overview.

| Symbol / note | Description |
|---------------|--|
| Note 1 | Variety of circumstances |
| ☀ | LED is ON |
| ☀ | LED is flashing |
| ● | LED is OFF |
| ⊙ | High probability of malfunction |
| ○ | Low probability of malfunction |
| □ | No possibility of malfunction (do not replace) |

1.6 Troubleshooting with the Outdoor Unit LEDs and the Remote Control: Outdoor Malfunctions




Malfunction overview

The table below contains an overview of the outdoor unit malfunctions.

| If... | | | | Then... | | | |
|---|---|---|---------------------|-----------------------------|----------------|--|----------|
| Outdoor unit LED | | | Rem. contr. display | Location of the malfunction | | Malfunction description | See page |
| HAP | H1P | H2P | | Other than PCB | PCB outd. unit | | |
|  |  |  | Note 1 | — | — | Normal | — |
|  |  |  | E0 | ⊙ | □ | Activation of Safety Device (E0) | 3–34 |
|  | — | — | Note 1 | — | ○ | Malfunctioning outdoor unit PCB | — |
|  | — | — | Note 1 | — | ○ | Malfunctioning power supply or outdoor unit PCB | — |
|  |  |  | E3 | ⊙ | — | Abnormal High Pressure (Detected by the HPS) (E3) | 3–39 |
|  |  |  | E4 | ⊙ | — | Abnormal Low Pressure (Detected by the LPS) (E4) | 3–41 |
|  |  |  | E9 | ⊙ | □ | Malfunctioning Electronic Expansion Valve (E9) | 3–43 |
|  |  |  | F3 | ⊙ | □ | Malfunctioning in Discharge Pipe Temperature (F3) | 3–45 |
|  |  |  | H3 | ⊙ | □ | Malfunctioning HPS (H3) | 3–47 |
|  |  |  | H9 | ⊙ | □ | Malfunctioning Outdoor Thermistor System (H9) | 3–48 |
|  |  |  | J3 | ⊙ | □ | Malfunctioning Discharge Pipe Thermistor System (J3) | 3–50 |
|  |  |  | J6 | ⊙ | □ | Malfunctioning Heat Exchanger Thermistor System (J6) | 3–51 |

Symbols and notes







The table below describes the symbols and notes used in the malfunction overview.

| Symbol / note | Description |
|---|--|
| Note 1 | Variety of circumstances |
|  | LED is ON |
|  | LED is flashing |
|  | LED is OFF |
| ⊙ | High probability of malfunction |
| ○ | Low probability of malfunction |
| □ | No possibility of malfunction (do not replace) |

1.7 Troubleshooting with the Outdoor Unit LEDs and the Remote Control: System Malfunctions




Malfunction overview

The table below contains an overview of the system malfunctions.

| If... | | | | Then... | | | | | |
|---|---|---|---------------------|-----------------------------|----------------|---------------|-------------|--|----------|
| Outdoor unit LED | | | Rem. contr. display | Location of the malfunction | | | | Malfunction description | See page |
| HAP | H1P | H2P | | Other than PCB | PCB outd. unit | PCB ind. unit | Rem. contr. | | |
|  |  |  | Note 1 | — | — | — | — | Normal | — |
| Note 2 | | | U0 | ⊙ | — | — | — | Gas Shortage Detection (U0) | 3-54 |
|  |  |  | U1 | ⊙ | □ | — | — | Reverse Phase (U1) | 3-55 |
| Note 2 | | | U4 or UF | ⊙ | ○ | ○ | — | Transmission Error between Indoor and Outdoor Unit (U4 or UF) | 3-57 |
| | | | U5 | ⊙ | — | ○ | ○ | Transmission Error between Indoor Unit and Remote Control (U5) | 3-60 |
| | | | U8 | ⊙ | — | ○ | ○ | Transmission Error between MAIN Remote Control and SUB Remote Control (U8) | 3-61 |
| | | | UR | ⊙ | — | ○ | — | Malfunctioning Field Setting Switch (UR) | 3-62 |

Symbols and notes

The table below describes the symbols and notes used in the malfunction overview.

| Symbol / note | Description |
|---|---|
| Note 1 | Variety of circumstances |
| Note 2 | All combinations that are not “normal” are possible |
|  | LED is ON |
|  | LED is flashing |
|  | LED is OFF |
| ⊙ | High probability of malfunction |
| ○ | Low probability of malfunction |
| □ | No possibility of malfunction (do not replace) |

1.8 Overview of the Indoor Safety Devices

Overview

The table below contains an overview of the indoor safety devices.

| Applicable unit | Thermal protector fan motor | | Thermal fuse fan motor | Fuse PCB |
|-----------------|-------------------------------|-------------------------------|-------------------------|----------|
| | Abnormal | Reset (automatic) | | |
| FH(Y)C(P) | $> 130 \pm 5^{\circ}\text{C}$ | $< 83 \pm 20^{\circ}\text{C}$ | N.A. | 5 A |
| FHYBP | N.A. | N.A. | $> 152^{\circ}\text{C}$ | |
| FH(Y)(P) | $> 130 \pm 5^{\circ}\text{C}$ | $< 83 \pm 20^{\circ}\text{C}$ | N.A. | |
| FUYP | $> 130 \pm 5^{\circ}\text{C}$ | $< 83 \pm 20^{\circ}\text{C}$ | N.A. | |
| FDYP | N.A. | N.A. | $> 160^{\circ}\text{C}$ | |
| FAYP | $> 130 \pm 5^{\circ}\text{C}$ | $< 83 \pm 20^{\circ}\text{C}$ | N.A. | |
| FH(Y)K(P) | $> 120 \pm 5^{\circ}\text{C}$ | $< 105^{\circ}\text{C}$ | N.A. | |

1.9 Overview of the Outdoor Safety Devices

Overview

The table below contains an overview of the outdoor safety devices.

| Applicable outdoor unit | Reverse phase protector | Overload contact compressor | Thermal protector fan motor | Overcurrent relay compressor | High-pressure switch | Low-pressure switch |
|-------------------------|-------------------------|-----------------------------|-----------------------------|------------------------------|----------------------|---------------------|
| RP71B7V1 | — | — | X | X | X | X |
| RYP71B7V1 | | | | | | |
| RP71B7W1 | X | | | | | |
| RYP71B7W1 | | | | | | |
| RP71B7T1 | | | | | | |
| RP100B7V1 | — | | | | | |
| RYP100B7V1 | | | | | | |
| RP100B7W1 | X | | | | | |
| RYP100B7W1 | | | | | | |
| RP100B7T1 | | | | | | |
| RP125B7W1 | | | | | | |
| RYP125B7W1 | | | | | | |
| RP125B7T1 | | | | | | |
| RP200B7W1 | | | | | | |
| RYP200B7W1 | | | | | | |
| RP250B7W1 | | | | | | |
| RYP250B7W1 | | | | | | |

1.10 Outdoor Safety Device: Thermal Protector Fan Motor

Thermal protector fan motor

The table below describes the thermal protector of the fan motor.

| Applicable outdoor unit | Wiring symbol | Location safety | Settings | | Type |
|-------------------------|---------------|-----------------------|----------|-----------|-----------|
| | | | Abnormal | Reset | Reset |
| RP71B7V1 | Q1L | Outdoor fan motor | > 140℃ | < 45 ±15℃ | Automatic |
| RYP71B7V1 | | | | | |
| RP71B7W1 | | | | | |
| RYP71B7W1 | | | | | |
| RP71B7T1 | | | | | |
| RP100B7V1 | Q1L and Q2L | Q1L connected to X11A | | | |
| RYP100B7V1 | | | | | |
| RP100B7W1 | | Q2L connected to X12A | | | |
| RYP100B7W1 | | | | | |
| RP100B7T1 | | | | | |
| RP125B7W1 | | | | | |
| RYP125B7W1 | | | | | |
| RP125B7T1 | | | | | |
| RP200B7W1 | | | | | |
| RYP200B7W1 | | | | | |
| RP250B7W1 | | | | | |
| RYP250B7W1 | | | | | |

1.11 Outdoor Safety Device: Overcurrent Relay Compressor

Overcurrent relay compressor

The table below describes the overcurrent relay of the compressor.

| Applicable outdoor unit | Wiring symbol | Location safety | Settings | Type |
|-------------------------|---------------|-----------------|-------------------------|-----------|
| | | | Abnormal | Reset |
| RP71B7V1 | F1C | Switch box | > 22.0 A ($\pm 10\%$) | Automatic |
| RYP71B7V1 | | | | |
| RP71B7W1 | | | > 10.0 A ($\pm 10\%$) | |
| RYP71B7W1 | | | | |
| RP71B7T1 | | | > 15.0 A ($\pm 10\%$) | |
| RP100B7V1 | | | > 33.0 A ($\pm 10\%$) | |
| RYP100B7V1 | | | | |
| RP100B7W1 | | | > 10.0 A ($\pm 10\%$) | |
| RYP100B7W1 | | | | |
| RP100B7T1 | | | > 22.0 A ($\pm 10\%$) | |
| RP125B7T1 | | | > 24.0 A ($\pm 10\%$) | |
| RP125B7W1 | | | > 13.0 A ($\pm 10\%$) | |
| RYP125B7T1 | | | | |
| RP200B7W1 | | | > 16.0 A ($\pm 10\%$) | |
| RYP200B7W1 | | | | |
| RP250B7W1 | | | > 20.0 A ($\pm 10\%$) | |
| RYP250B7W1 | | | | |

1.12 Outdoor Safety Device: Reverse Phase Protector

Reverse phase protector

The table below describes the reverse phase protector.

| Applicable outdoor unit | Wiring symbol | Location safety | Type |
|-------------------------|----------------------------|-----------------|-------------------------|
| | | | Reset |
| RP71B7V1 | No reverse phase protector | | |
| RYP71B7V1 | | | |
| RP71B7W1 | PRC | Switch box | Automatic and power OFF |
| RYP71B7W1 | | | |
| RP71B7T1 | | | |
| RP100B7V1 | No reverse phase protector | | |
| RYP100B7V1 | | | |
| RP100B7W1 | PRC | Switch box | Automatic and power OFF |
| RYP100B7W1 | | | |
| RP100B7T1 | | | |
| RP125B7W1 | | | |
| RYP125B7W1 | | | |
| RP125B7T1 | | | |
| RP200B7W1 | | | |
| RYP200B7W1 | | | |
| RP250B7W1 | | | |
| RYP250B7W1 | | | |

1.13 Outdoor Safety Device: High-Pressure Switch

High-pressure switch

The table below describes the high-pressure switch.

| Applicable outdoor unit | Wiring symbol | Location safety | Settings | | Type |
|-------------------------|---------------|-----------------|------------|------------|-----------|
| | | | Abnormal | Reset | Reset |
| RP71B7V1 | S1PH | Discharge pipe | > 33 bar | < 25.5 bar | Automatic |
| RYP71B7V1 | | | | | |
| RP71B7W1 | | | | | |
| RYP71B7W1 | | | | | |
| RP71B7T1 | | | | | |
| RP100B7V1 | | | | | |
| RYP100B7V1 | | | | | |
| RP100B7W1 | | | | | |
| RYP100B7W1 | | | | | |
| RP100B7T1 | | | | | |
| RP125B7W1 | | | | | |
| RYP125B7W1 | | | | | |
| RP125B7T1 | | | | | |
| RP200B7W1 | | | > 32.5 bar | < 25 bar | |
| RYP200B7W1 | | | | | |
| RP250B7W1 | | | | | |
| RYP250B7W1 | | | | | |

1.14 Outdoor Safety Device: Low-Pressure Switch

Low-pressure switch

The table below describes the low-pressure switch.

| Applicable outdoor unit | Wiring symbol | Location safety | Settings | | Type |
|-------------------------|---------------|---|------------|------------|-----------|
| | | | Abnormal | Reset | Reset |
| RP71B7V1 | S1LP | Low-pres- sure switch located in suction pipe | < -0.3 bar | > +0.5 bar | Automatic |
| RYP71B7V1 | | | | | |
| RP71B7W1 | | | | | |
| RYP71B7W1 | | | | | |
| RP71B7T1 | | | | | |
| RP100B7V1 | | | | | |
| RYP100B7V1 | | | | | |
| RP100B7W1 | | | | | |
| RYP100B7W1 | | | | | |
| RP100B7T1 | | | | | |
| RP125B7W1 | | | | | |
| RYP125B7W1 | | | | | |
| RP125B7T1 | | | | | |
| RP200B7W1 | | | | | |
| RYP200B7W1 | | | | | |
| RP250B7W1 | | | | | |
| RYP250B7W1 | | | | | |

2 Error Codes: Indoor Units

2.1 What Is in This Chapter?

Introduction In the first stage of the troubleshooting sequence, it is important to correctly interpret the error code on the remote control display. The error code helps you to find the cause of the problem.

Shutdown For some errors, the system only shuts down when the error occurs several times. This means that you have to wait until the system shuts down to be able to see the flashing LED on the front panel and the error code on the remote control.









Overview This chapter contains the following topics:

| Topic | See page |
|---|----------|
| 2.2—Malfunctioning Indoor PCB (P1) | 3-22 |
| 2.3—Malfunctioning Drain Water Level System (P3) | 3-23 |
| 2.4—Indoor Unit Fan Motor Lock (P5) | 3-25 |
| 2.5—Malfunctioning Drain System (PF) | 3-27 |
| 2.6—Malfunctioning Capacity Setting (PL) | 3-28 |
| 2.7—Thermistor Abnormality (L4 or L9) | 3-30 |
| 2.8—Malfunctioning Remote Control Air Thermistor (LJ) | 3-32 |

2.2 Malfunctioning Indoor PCB (R1)

Error code R1

LED indications The table below shows the LED indications.

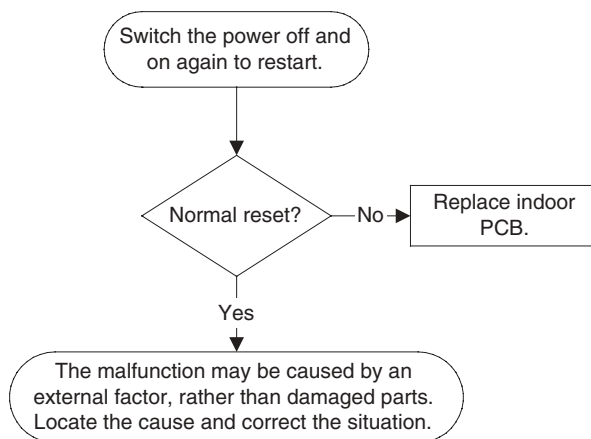
| Operation | HAP (green) | HBP (green) |
|----------------|---|---|
| Normal |  |  |
| Malfunctioning |  |  |
| |  |  |
| |  | — |
| |  | — |

Error generation The error is generated when the data from the EEPROM is not received correctly.

EEPROM (Electrically Erasable Programmable Read Only Memory): A memory chip that holds its content without power. It can be erased, either within the computer or externally and usually requires more voltage for erasure than the common +5 volts used in logic circuits. It functions like non-volatile RAM, but writing to EEPROM is slower than writing to RAM.

Causes The possible cause is a malfunctioning indoor PCB.

Troubleshooting To troubleshoot, proceed as follows:







2.3 Malfunctioning Drain Water Level System (A3)

Error code

A3

LED indications

The table below shows the LED indications.

| Operation | HAP (green) | HBP (green) |
|----------------|---|---|
| Normal |  |  |
| Malfunctioning |  |  |

Error generation

The error is generated when the water level reaches its upper limit and when the float switch turns OFF.

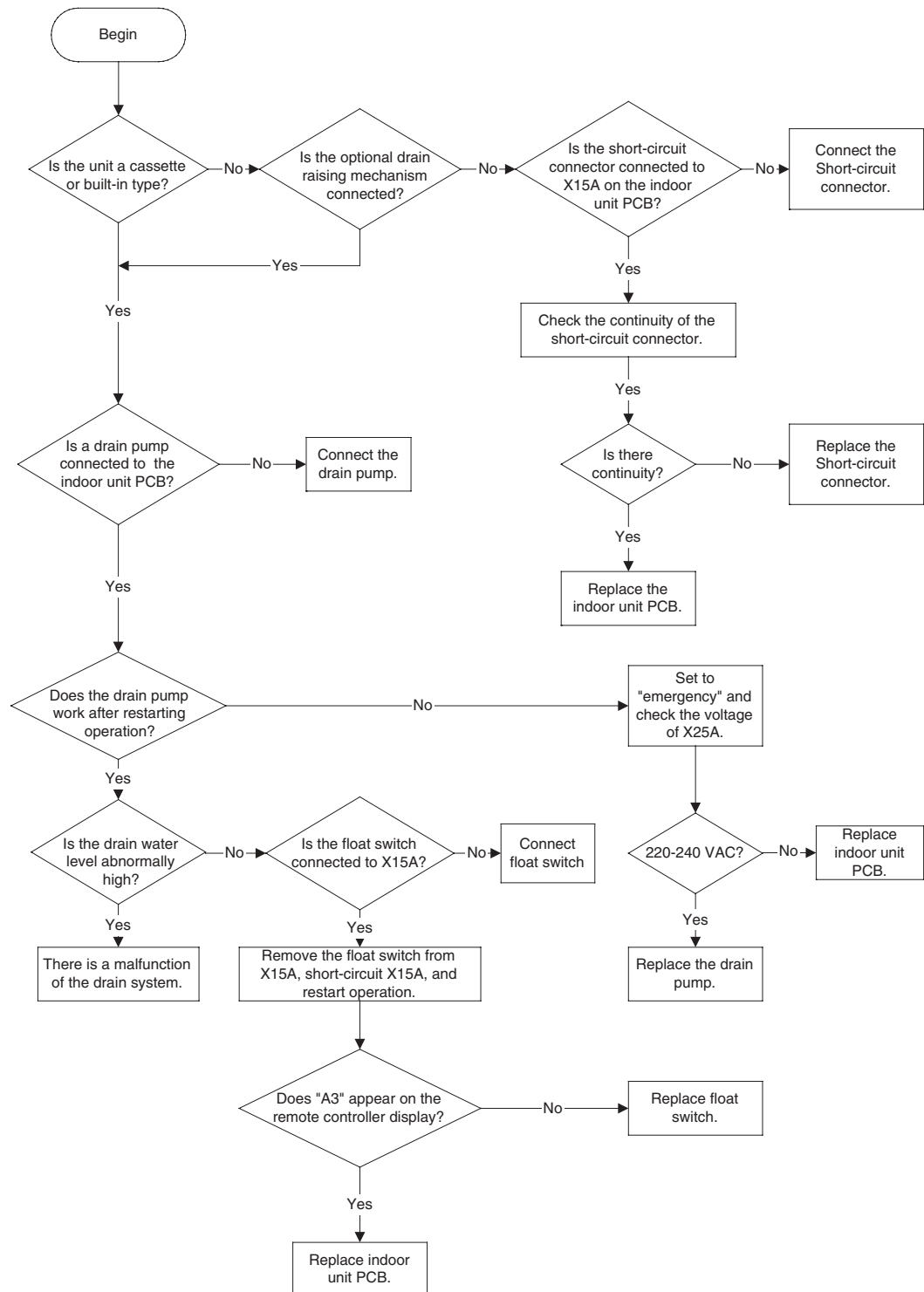
Causes

The possible causes are:





- Malfunctioning drain pump
- Improper drain piping work
- Drain piping clogging
- Malfunctioning float switch
- Malfunctioning indoor unit PCB
- Malfunctioning short-circuit connector X15 on PCB.

Troubleshooting

To troubleshoot, proceed as follows:

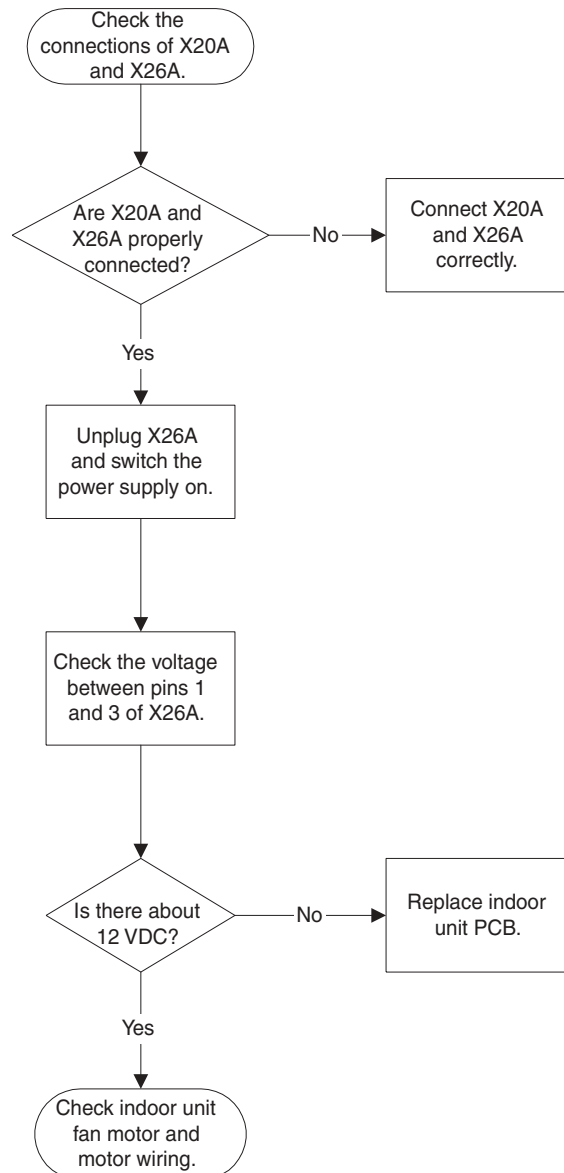


2.4 Indoor Unit Fan Motor Lock (R6)

| | | | |
|------------------|--|---|---|
| Error code | R6 | | |
| LED indications | The table below shows the LED indications. | | |
| | Operation | HAP (green) | HBP (green) |
| | Normal |  |  |
| | Malfunctioning |  |  |
| Error generation | The error is generated when the fan rotations are not detected while the output voltage to the fan is at its maximum. | | |
| Causes | The possible causes are: <ul style="list-style-type: none">■ Malfunctioning indoor unit fan motor■ Broken or disconnected wire■ Malfunctioning contact■ Malfunctioning indoor unit PCB. | | |

Troubleshooting

To troubleshoot, proceed as follows:



2.5 Malfunctioning Drain System (AF)

Error code

AF

LED indications

The table below shows the LED indications.

| Operation | HAP (green) | HBP (green) |
|----------------|-------------|-------------|
| Normal | ● | ● |
| Malfunctioning | ● | ● |

Error generation

The error is generated when the float switch changes from ON to OFF while the compressor is OFF.

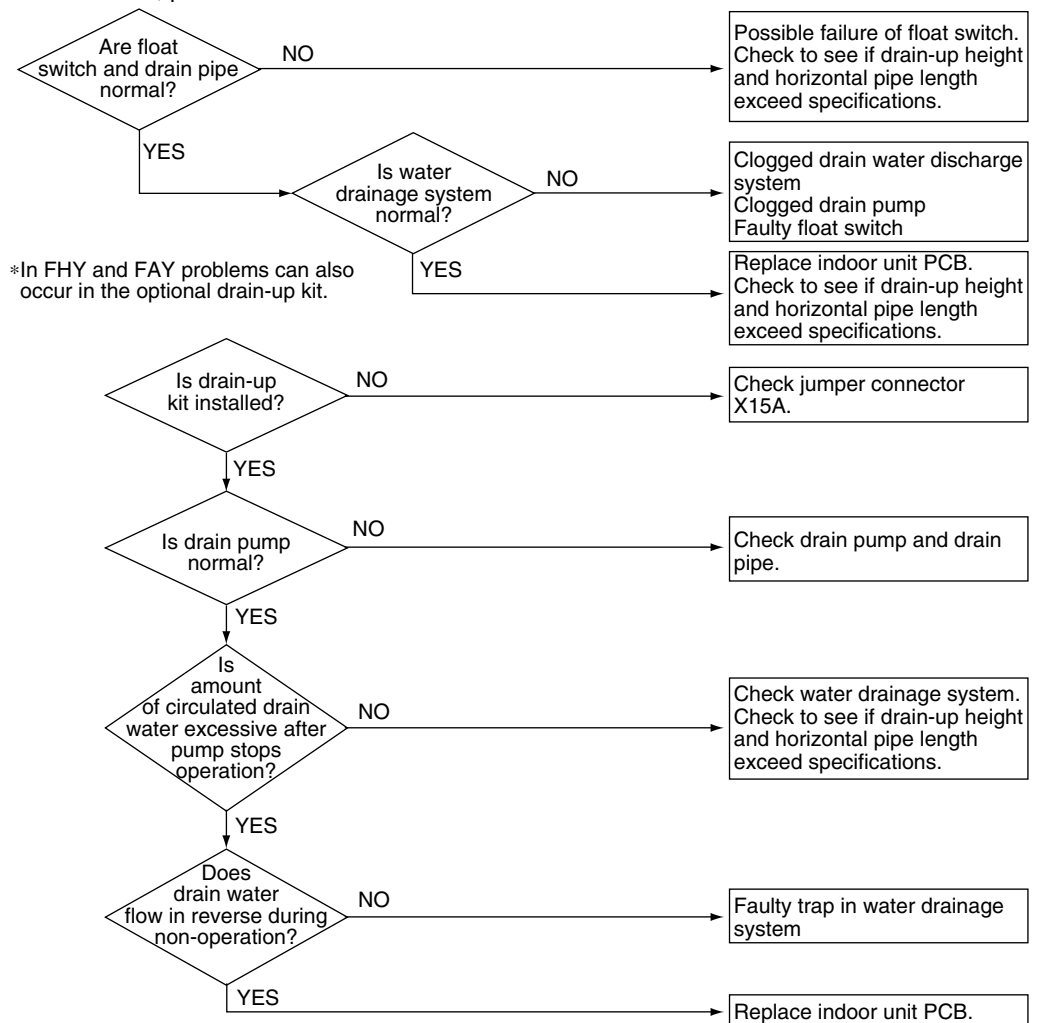
Causes

The possible causes are:

- Error in the drain pipe installation
- Malfunctioning float switch
- Malfunctioning indoor unit PCB.

Troubleshooting

To troubleshoot, proceed as follows:







2.6 Malfunctioning Capacity Setting (R_U)

Error code

R_U

LED indications

The table below shows the LED indications.

| Operation | HAP (green) | HBP (green) |
|----------------|---|---|
| Normal |  |  |
| Malfunctioning |  |  |

Error generation

The error is generated when the following conditions are fulfilled:

| Condition | Description |
|-----------|--|
| 1 | <ul style="list-style-type: none"> ■ The unit is in operation. ■ The PCB's memory IC does not contain the capacity code. ■ The capacity setting adapter is not connected. |
| 2 | <ul style="list-style-type: none"> ■ The unit is in operation. ■ The capacity that is set, does not exist for that unit. |

Causes

The possible causes are:

- Malfunctioning capacity setting adapter connection
- Malfunctioning indoor unit PCB.

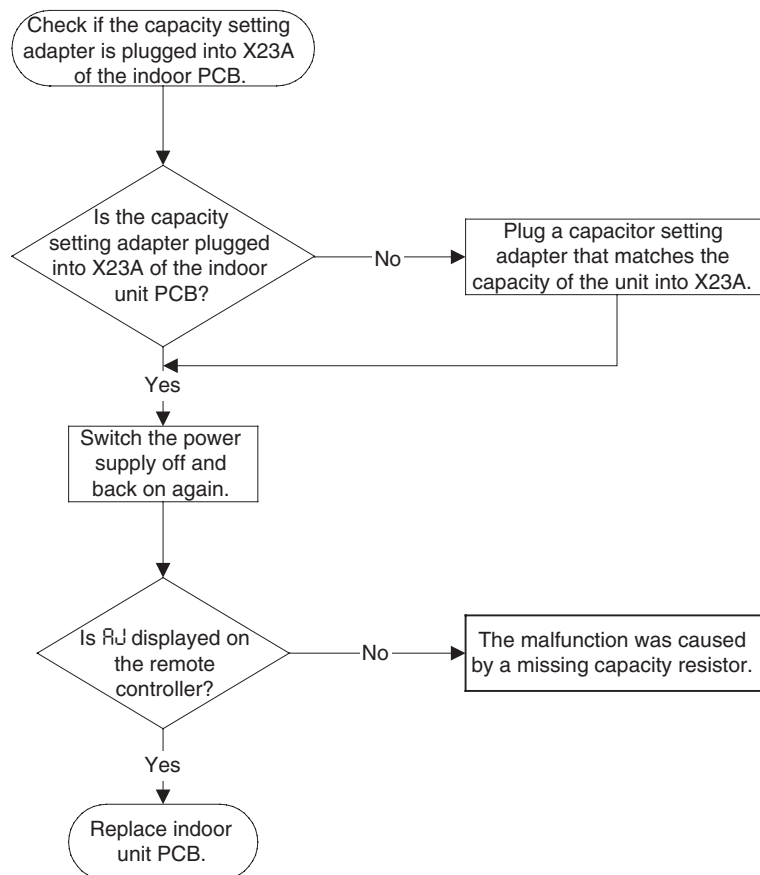
Capacity setting adapter

The capacity is set in the PCB's memory IC. A capacity setting adapter that matches the capacity of the unit is required in the following case:

In case the indoor PCB installed at the factory is for some reason changed at the installation site, the capacity will not be contained in the replacement PCB. To set the correct capacity for the PCB you have to connect a capacity setting adapter with the correct capacity setting to the PCB. The capacity setting for the PCB will become the capacity setting of the adapter because the capacity setting adapter has priority.

Troubleshooting

To troubleshoot, proceed as follows:



2.7 Thermistor Abnormality (C4 or C9)





Error code

The table below describes the two thermistor abnormalities.

| Error | Description |
|-------|--|
| C4 | Malfunctioning heat exchanger thermistor system. |
| C9 | Malfunctioning suction air thermistor system. |

LED indications

The table below shows the LED indications.

| Operation | HAP (green) | HBP (green) |
|----------------|---|---|
| Normal |  |  |
| Malfunctioning |  |  |

Error generation

The error is generated when during compressor operation:

- Thermistor input > 4.96 V, or
- Thermistor output < 0.04 V.

Causes

The possible causes are:

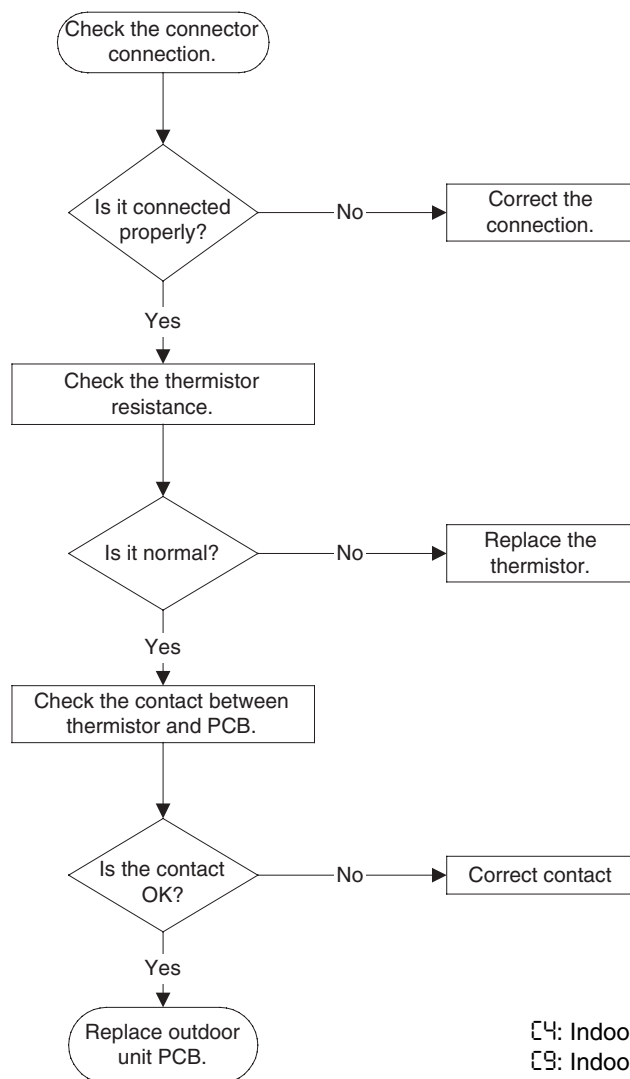
- Malfunctioning connector connection
- Malfunctioning thermistor
- Malfunctioning PCB
- Broken or disconnected wire.

Checking thermistors

See page 3-72.

Troubleshooting

To troubleshoot, proceed as follows:



2.8 Malfunctioning Remote Control Air Thermistor (CJ)

Error code

CJ

LED indications

The table below shows the LED indications.

| Operation | HAP (green) | HBP (green) |
|----------------|-------------|-------------|
| Normal | ● | ● |
| Malfunctioning | ● | ● |

Error generation

The error is generated when the remote control thermistor becomes disconnected or shorted while the unit is running.

Even if the remote control thermistor is malfunctioning, the system can operate with the system thermistor.

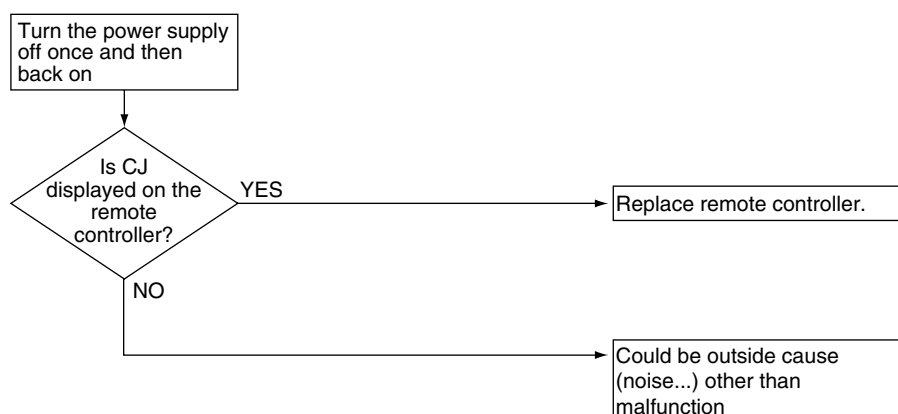
Causes

The possible causes are:

- Malfunctioning thermistor
- Broken wire.

Troubleshooting

To troubleshoot, proceed as follows:



3 Error Codes: Outdoor Units

3.1 What Is in This Chapter?

Introduction

In the first stage of the troubleshooting sequence, it is important to correctly interpret the error code on the remote control display. The error code helps you to find the cause of the problem.

Overview

This chapter contains the following topics:

| Topic | See page |
|---|----------|
| 3.2—Activation of Safety Device (E0) | 3-34 |
| 3.3—Abnormal High Pressure (Detected by the HPS) (E3) | 3-39 |
| 3.4—Abnormal Low Pressure (Detected by the LPS) (E4) | 3-41 |
| 3.5—Malfunctioning Electronic Expansion Valve (E9) | 3-43 |
| 3.6—Malfunctioning in Discharge Pipe Temperature (F3) | 3-45 |
| 3.7—Malfunctioning HPS (H3) | 3-47 |
| 3.8—Malfunctioning Outdoor Thermistor System (H9) | 3-48 |
| 3.9—Malfunctioning Discharge Pipe Thermistor System (J3) | 3-50 |
| 3.10—Malfunctioning Heat Exchanger Thermistor System (J5) | 3-51 |







3.2 Activation of Safety Device (E0)

Error code

E0

LED indications

The table below shows the LED indications.

| Operation | HAP (green) | H1P (red) | H2P (red) |
|-------------|---|---|---|
| Normal |  |  |  |
| Malfunction |  |  |  |

Error generation

The error is generated when a safety device has detected an abnormality.

Causes

The possible causes are:

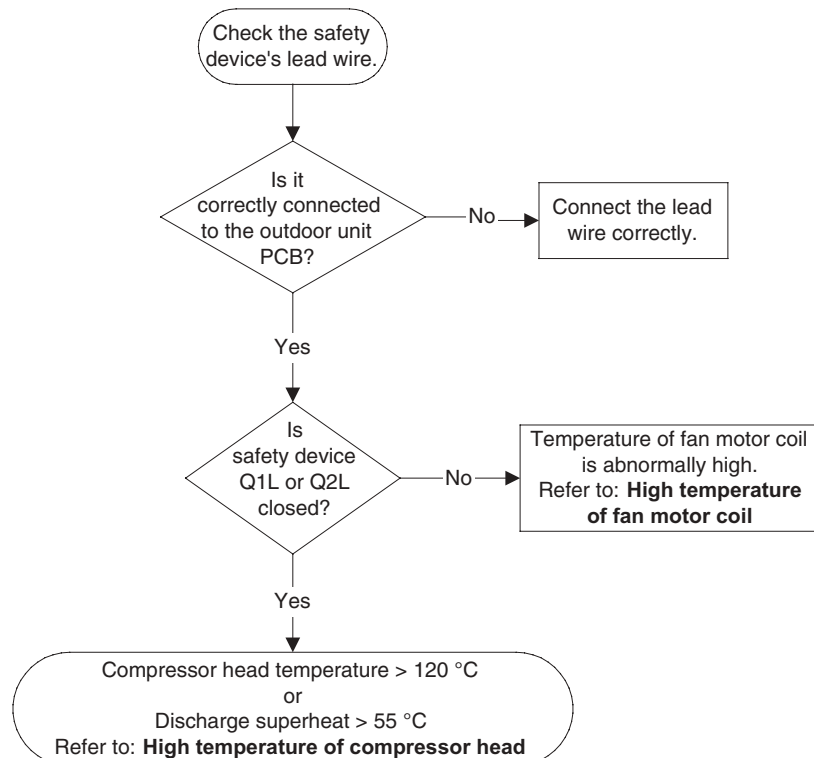
- Malfunctioning safety device input connection
- Broken or disconnected safety device harness
- Stop valve is set to “close”
- Clogging refrigerant piping circuit
- Air short-circuit
- Malfunctioning outdoor PCB.

Overview outdoor safety devices

See page 3–15.

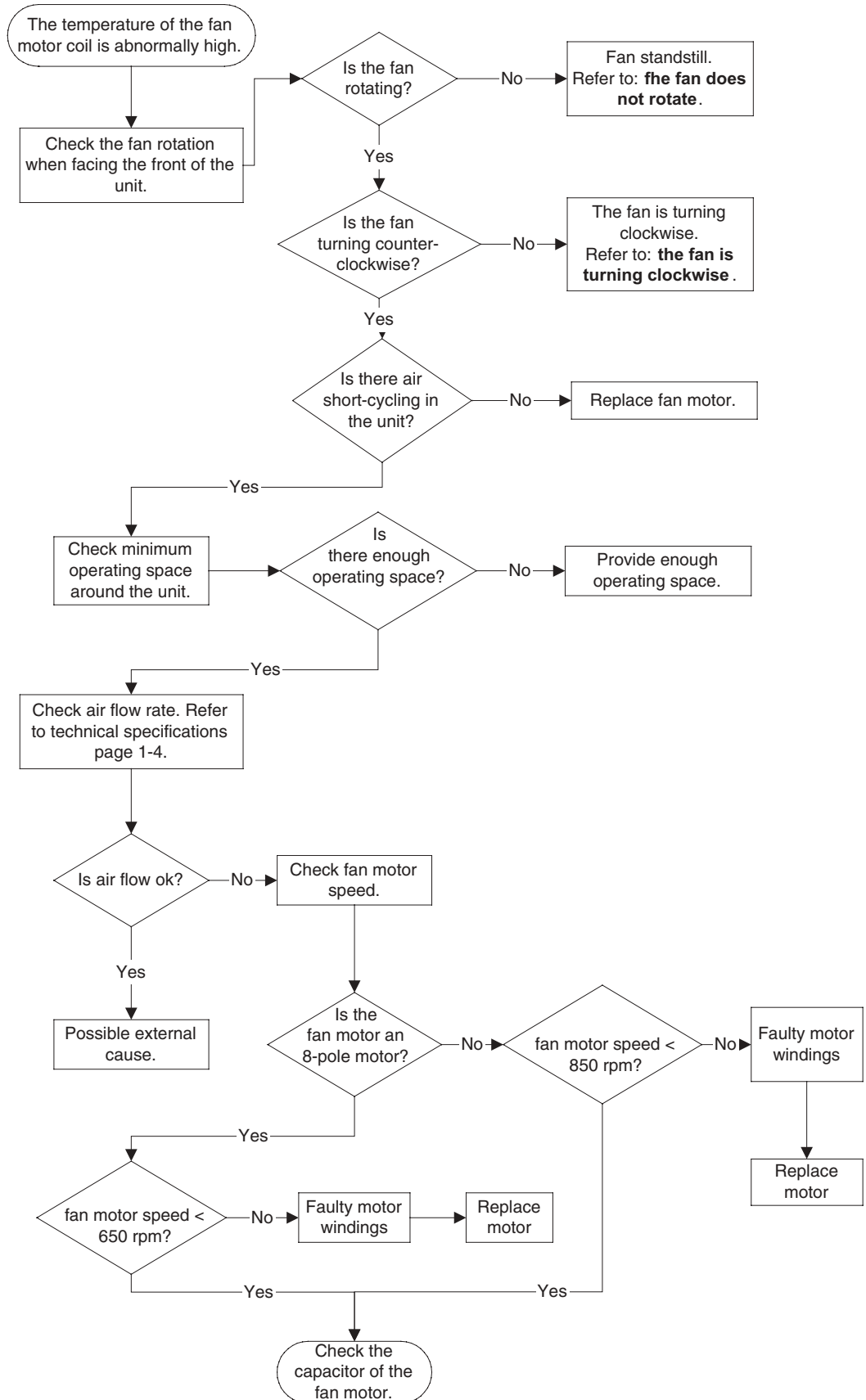
Troubleshooting

To troubleshoot, proceed as follows:



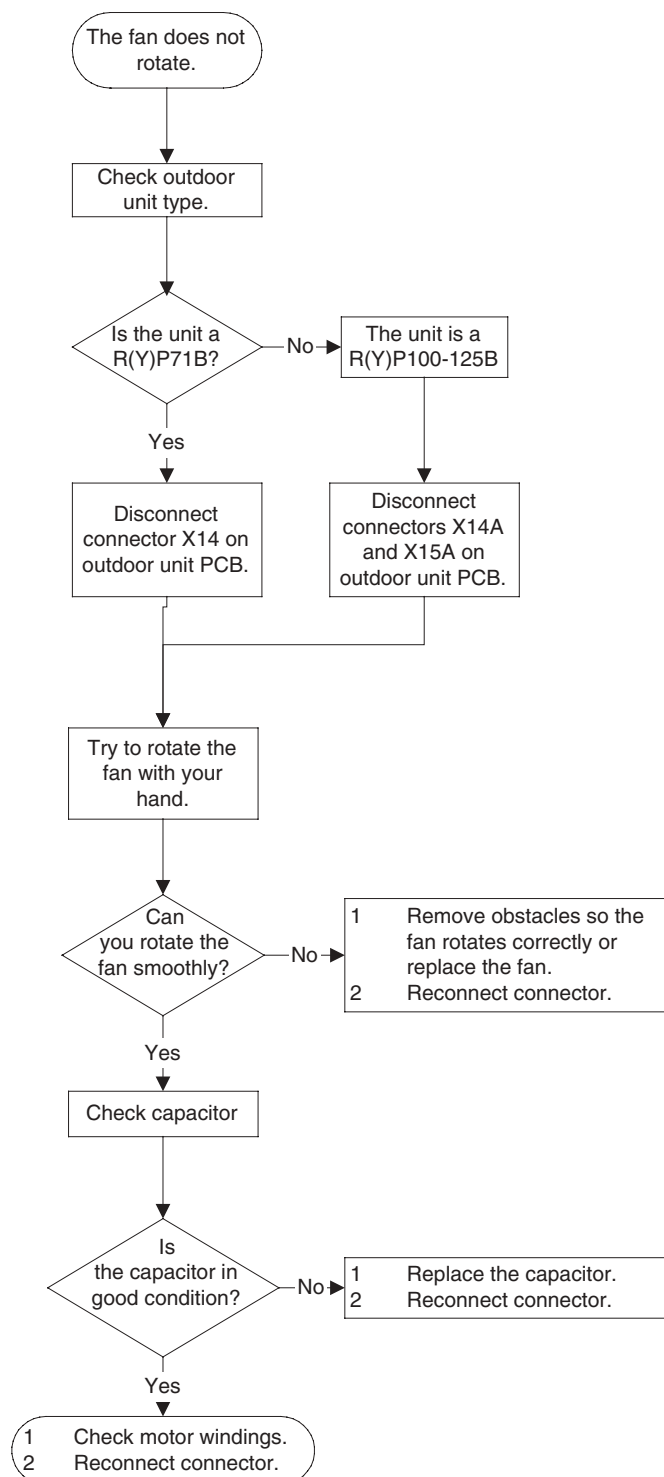
High temperature of fan motor coil

To troubleshoot, proceed as follows:



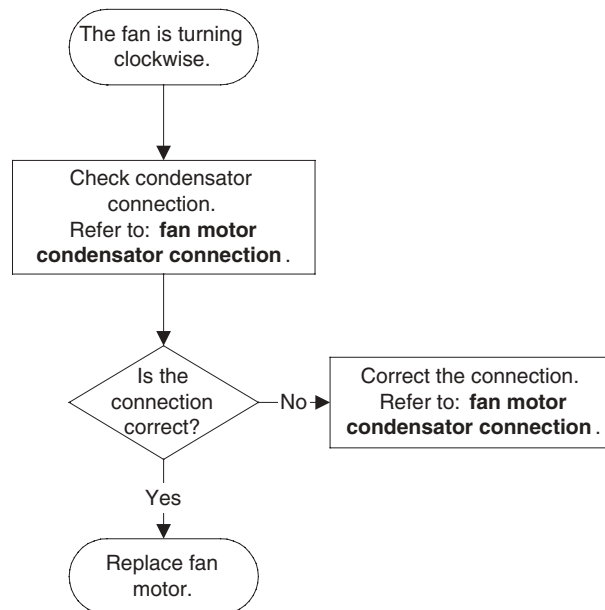
The fan does not rotate

To troubleshoot, proceed as follows:

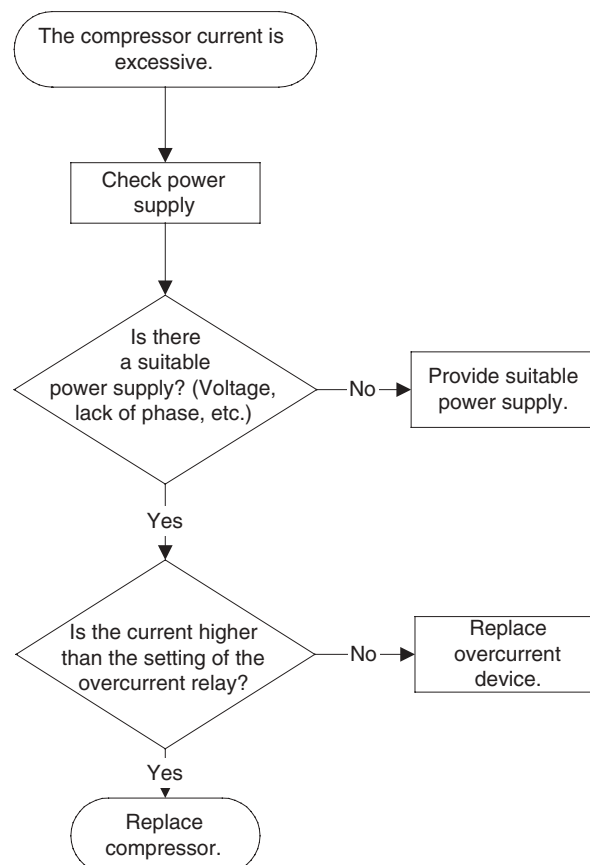


The fan is turning clockwise

To troubleshoot, proceed as follows:

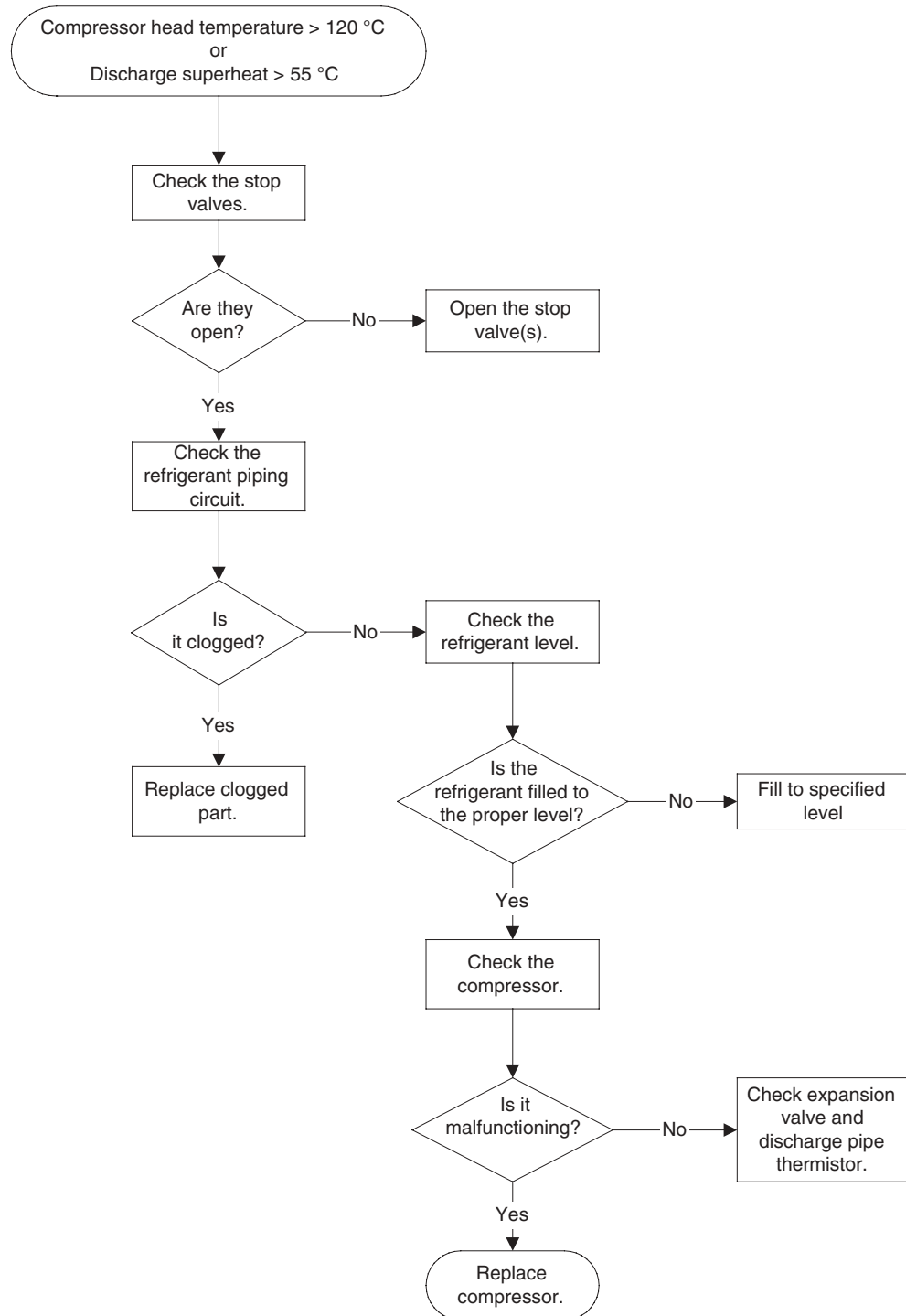
**Excessive compressor current**

To troubleshoot, proceed as follows:



High temperature of compressor head







To troubleshoot, proceed as follows:



3.3 Abnormal High Pressure (Detected by the HPS) (E3)

Error code E3

LED indications The table below shows the LED indications.

| Operation | HAP (green) | H1P (red) | H2P (red) |
|-------------|---|---|---|
| Normal |  |  |  |
| Malfunction |  |  |  |

Error generation The error is generated when the high-pressure switch is activated during compressor operation.

Causes

The possible causes are:

- Abnormal high pressure caused by too much refrigerant or by non-condensable gas (air or nitrogen)
- Inaccuracy of the high-pressure switch
- Broken or disconnected high-pressure switch harness
- Malfunctioning high-pressure switch connector connection
- Malfunctioning outdoor unit PCB
- Malfunctioning refrigerant piping circuit.

HPS settings

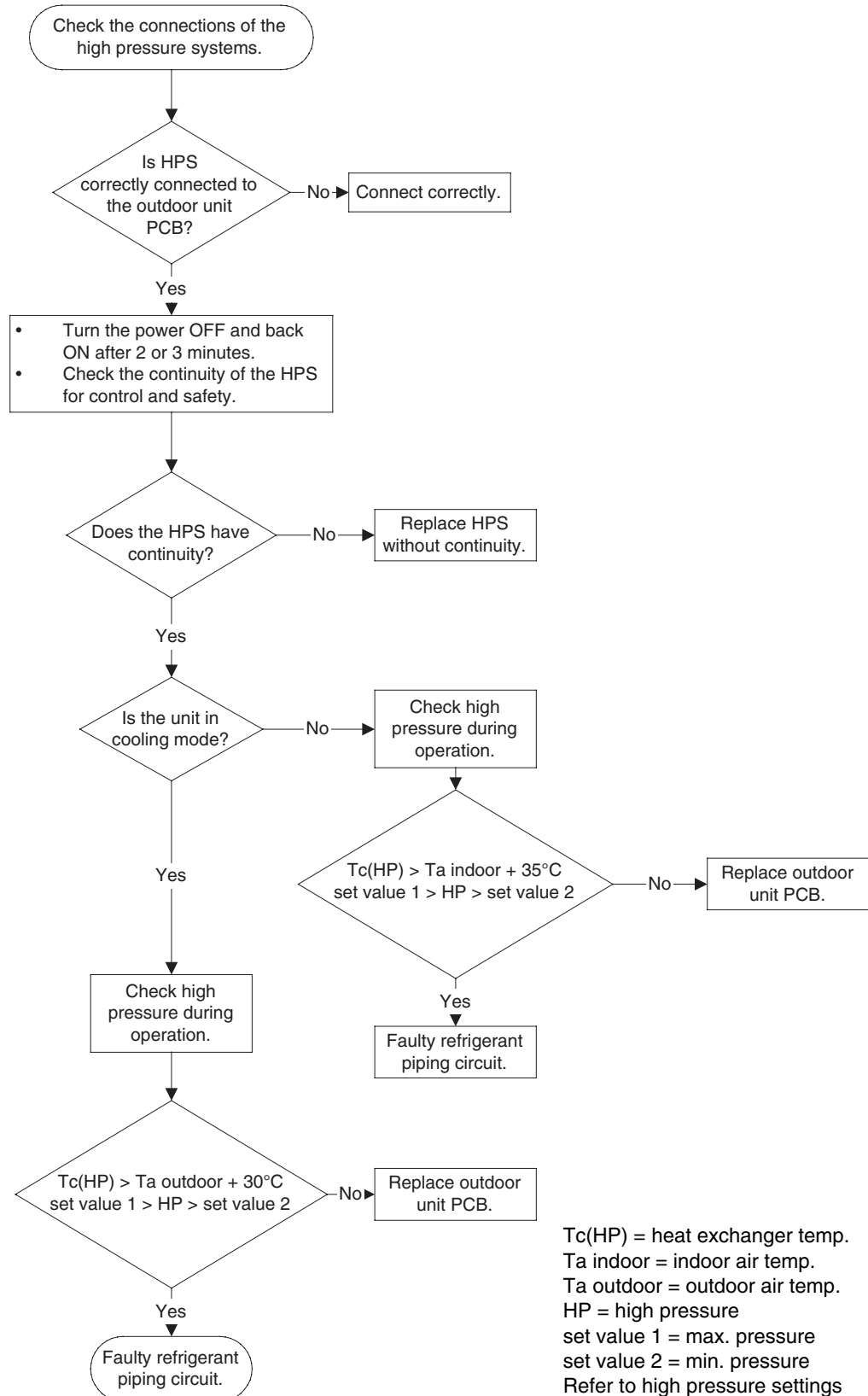
The table below contains the preset HPS values.

| Applicable units | Abnormal | Reset |
|------------------|------------|------------|
| R(Y)P71/100/125B | > 33 bar | < 25.5 bar |
| R(Y)P200/250 | > 32.5 bar | < 25 bar |

3

Troubleshooting

To troubleshoot, proceed as follows:









Some models are not equipped with a HPS.

3.4 Abnormal Low Pressure (Detected by the LPS) (E4)

Error code E4

LED indications The table below shows the LED indications.

| Operation | HAP (green) | H1P (red) | H2P (red) |
|-------------|---|---|---|
| Normal |  |  |  |
| Malfunction |  |  |  |

Error generation The error is generated when the low-pressure switch is activated during compressor operation.

Causes

The possible causes are:

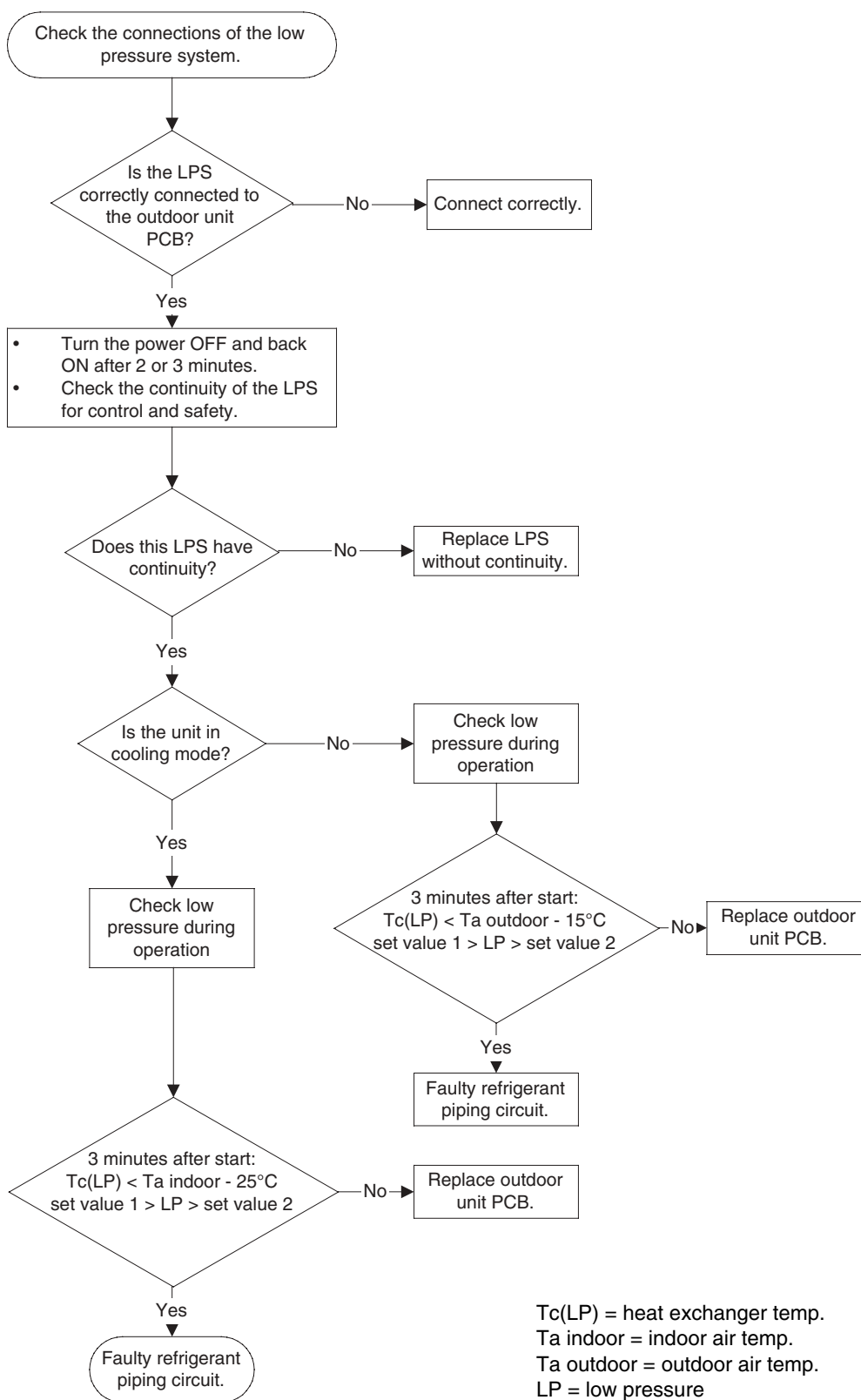
- Malfunctioning refrigerant piping circuit
- Malfunctioning low-pressure switch
- Disconnected or broken low-pressure switch harness
- Malfunctioning low-pressure switch connector connection
- Malfunctioning outdoor unit PCB.

LPS settings The table below contains the preset LPS values.

| Applicable units | Abnormal | Reset |
|--------------------------|------------|------------|
| R(Y)P71/100/125/200/250B | < -0.3 bar | > +0.5 bar |

Troubleshooting

To troubleshoot, proceed as follows:









$T_c(LP)$ = heat exchanger temp.
 $T_a \text{ indoor}$ = indoor air temp.
 $T_a \text{ outdoor}$ = outdoor air temp.
 LP = low pressure
 set value 1 = max. pressure
 set value 2 = min. pressure
 Refer to low pressure settings

3.5 Malfunctioning Electronic Expansion Valve (E9)

Error code E9

LED indications The table below shows the LED indications.

| Operation | HAP (green) | H1P (red) | H2P (red) |
|-------------|---|---|---|
| Normal |  |  |  |
| Malfunction |  |  |  |

Error generation The error is generated when the following coil current condition is not met:

Open circuit < coil current < short circuit.

Resistance values The table below contains the reference resistance values.

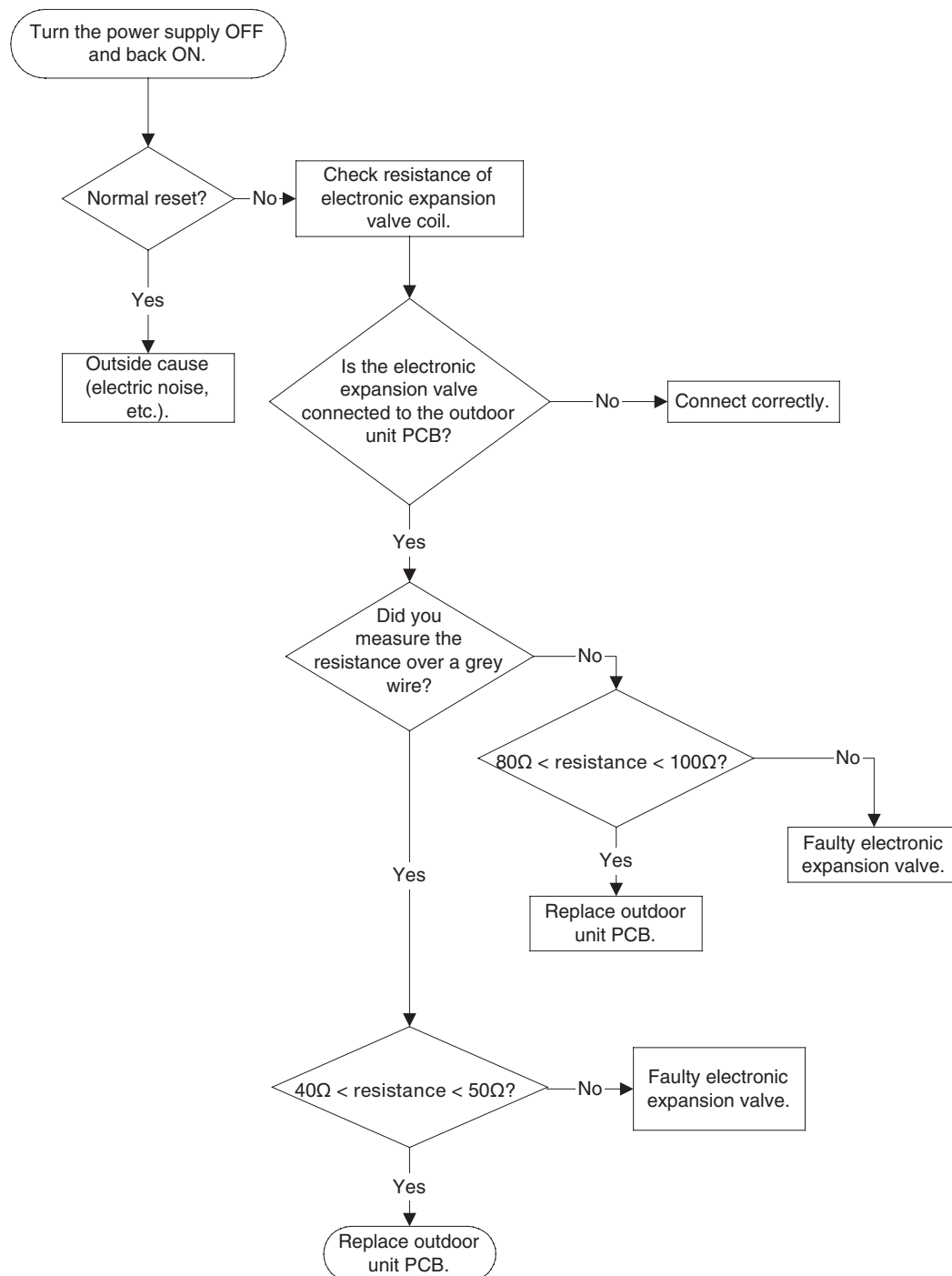
| — | Grey | Black | Yellow | Red | Orange |
|--------|---------|----------|----------|----------|----------|
| Grey | — | 40-50 Ω | 40-50 Ω | 40-50 Ω | 40-50 Ω |
| Black | 40-50 Ω | — | 80-100 Ω | 80-100 Ω | 80-100 Ω |
| Yellow | 40-50 Ω | 80-100 Ω | — | 80-100 Ω | 80-100 Ω |
| Red | 40-50 Ω | 80-100 Ω | 80-100 Ω | — | 80-100 Ω |
| Orange | 40-50 Ω | 80-100 Ω | 80-100 Ω | 80-100 Ω | — |

Causes The possible causes are:

- Malfunctioning electronic expansion valve
- Broken or disconnected electronic expansion valve harness
- Malfunctioning electronic expansion valve connector connection
- Malfunctioning outdoor unit PCB
- Outside cause (electric noise...).

Troubleshooting

To troubleshoot, proceed as follows:



3.6 Malfunctioning in Discharge Pipe Temperature (F3)

Error code

F3

LED indications

The table below shows the LED indications.

| Operation | HAP (green) | H1P (red) | H2P (red) |
|-------------|-------------|-----------|-----------|
| Normal | ● | ● | ● |
| Malfunction | ● | ● | ● |

Error generation

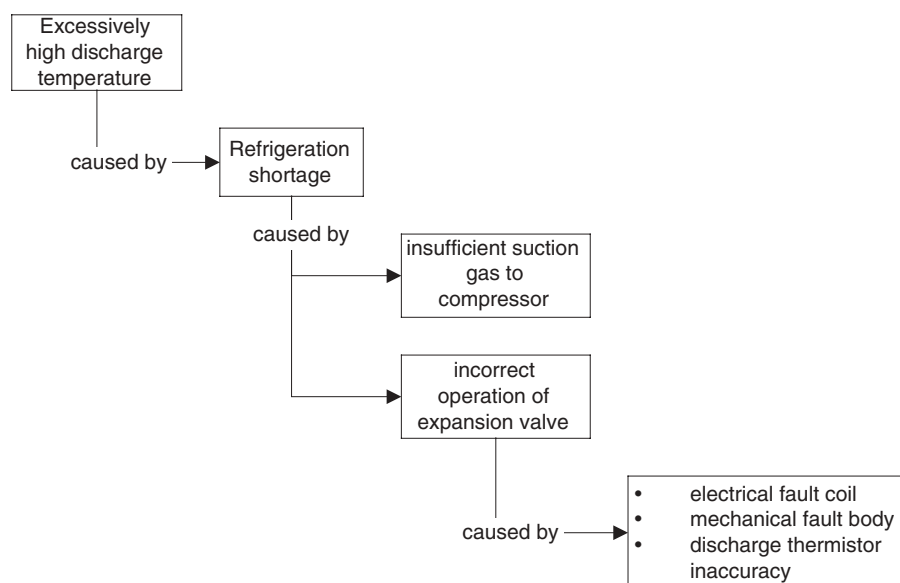
The error is generated when:

- Discharge pipe temperature becomes abnormally high
- Discharge pipe temperature rises suddenly
- Discharge pipe thermistor is not in its holder.

Causes

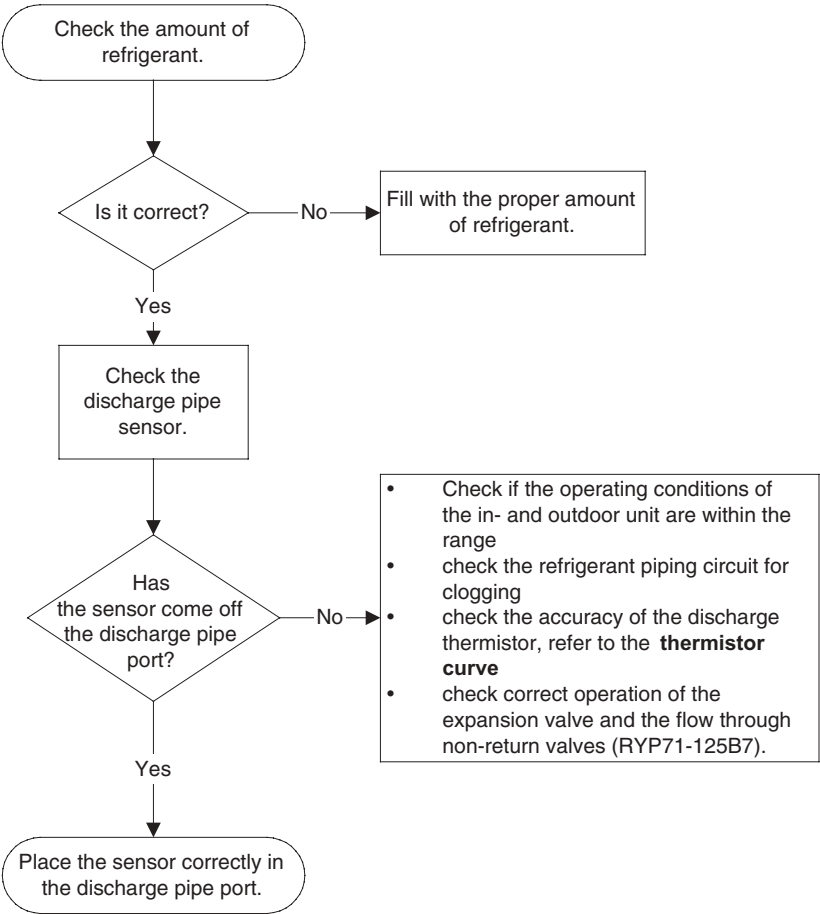
The possible causes are:

- Improper refrigerant amount
- Clogging refrigerant piping circuit
- Discharge temperature that is too low due to too much refrigerant or due to the discharge thermistor being out of its holder
- Discharge temperature that is too high. The possible causes are:



Troubleshooting

To troubleshoot, proceed as follows:



Thermistor curve

See page 3-74.

3.7 Malfunctioning HPS (H3)

Error code

H3

LED indications

The table below shows the LED indications.

| Operation | HAP (green) | H1P (red) | H2P (red) |
|-------------|-------------|-----------|-----------|
| Normal | ☀ | ● | ● |
| Malfunction | ☀ | ☀ | ☀ |

Error generation

The error is generated when there is no continuity in the high-pressure switch during compressor OFF.

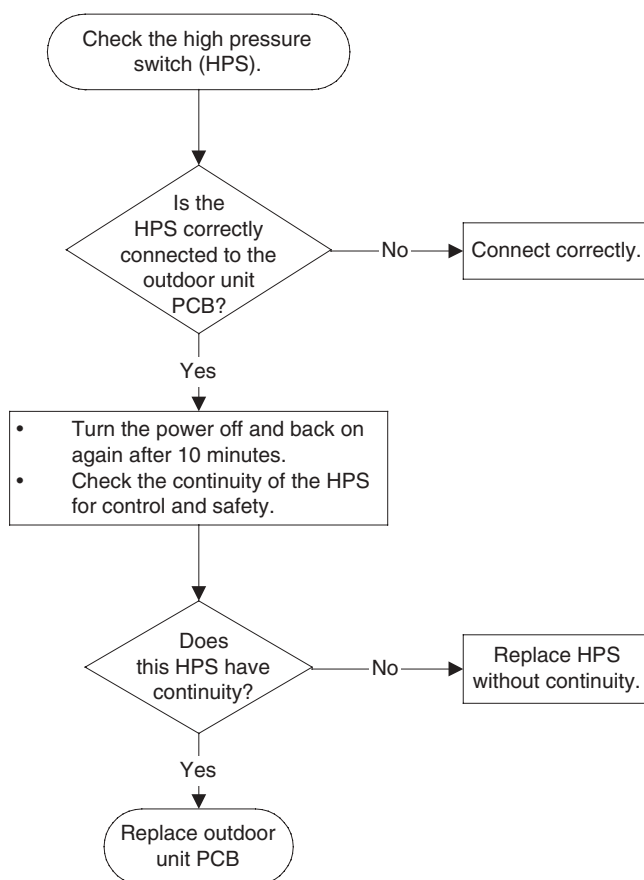
Causes

The possible causes are:

- Malfunctioning high-pressure switch
- Broken or disconnected high-pressure switch harness
- Malfunctioning high-pressure switch connector connection
- Malfunctioning outdoor unit PCB.

Troubleshooting







To troubleshoot, proceed as follows:



3.8 Malfunctioning Outdoor Thermistor System (H9)

Error code H9

LED indications The table below shows the LED indications.

| Operation | HAP (green) | H1P (red) | H2P (red) |
|-------------|---|---|---|
| Normal |  |  |  |
| Malfunction |  |  |  |

Error generation The error is generated when the thermistor resistance is out of its range (60Ω to 600kΩ).

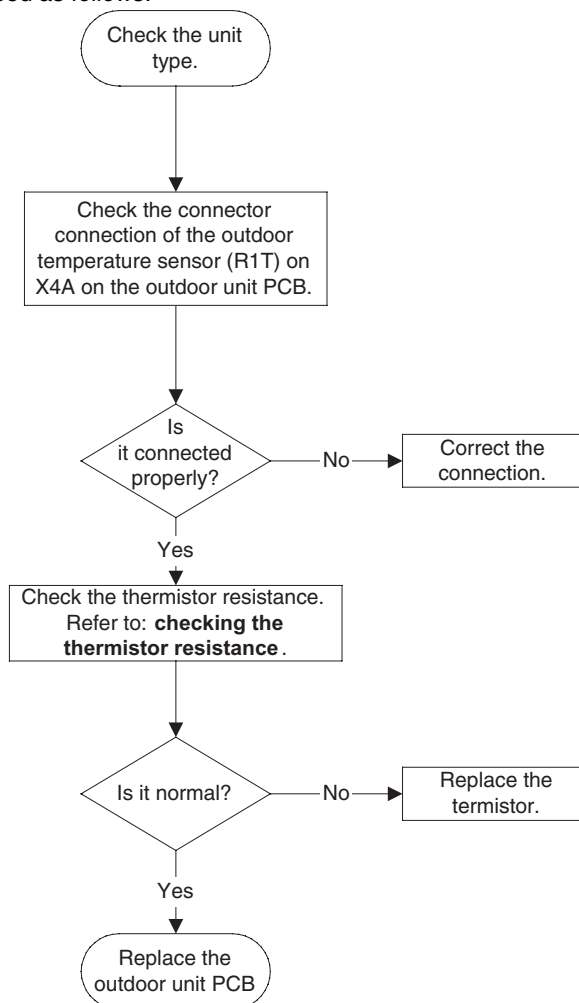
Causes

The possible causes are:

- Malfunctioning outdoor thermistor
- Malfunctioning outdoor thermistor connector connection
- Malfunctioning outdoor unit PCB.

Troubleshooting

To troubleshoot, proceed as follows:



**Checking the
thermistor
resistance**

See page 3-73.







3.9 Malfunctioning Discharge Pipe Thermistor System (J3)

Error code

J3

LED indications

The table below shows the LED indications.

| Operation | HAP (green) | H1P (red) | H2P (red) |
|-------------|---|---|---|
| Normal |  |  |  |
| Malfunction |  |  |  |

Error generation

The error is generated when the thermistor resistance is out of its range.

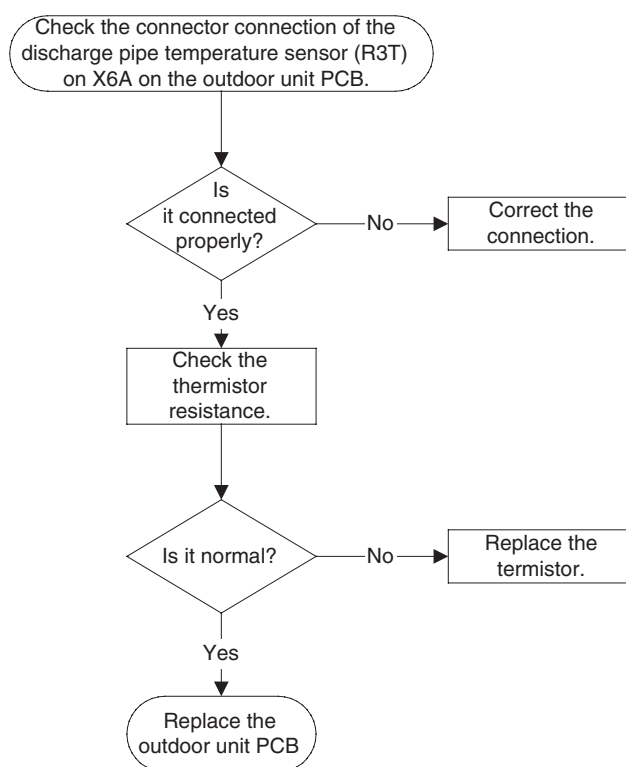
Causes

The possible causes are:

- Malfunctioning discharge pipe thermistor
- Malfunctioning discharge pipe thermistor connector connection
- Malfunctioning outdoor unit PCB.

Troubleshooting

To troubleshoot, proceed as follows:









3.10 Malfunctioning Heat Exchanger Thermistor System (J6)

Error code

J6

LED indications

The table below shows the LED indications.

| Operation | HAP (green) | H1P (red) | H2P (red) |
|-------------|---|---|---|
| Normal |  |  |  |
| Malfunction |  |  |  |

Error generation

The error is generated when the thermistor resistance is out of its range.

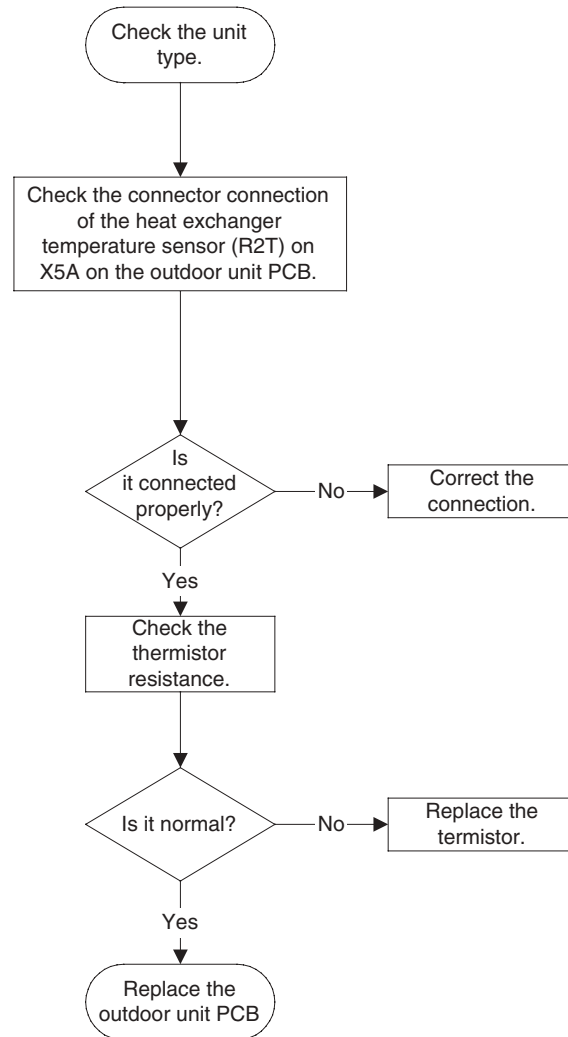
Causes

The possible causes are:

- Malfunctioning heat exchanger thermistor
- Malfunctioning heat exchanger thermistor connector connection
- Malfunctioning outdoor unit PCB.

Troubleshooting

To troubleshoot, proceed as follows:



4 Error Codes: System Malfunctions

4.1 What Is in This Chapter?

Introduction In the first stage of the troubleshooting sequence, it is important to correctly interpret the error code on the remote control display. The error code helps you to find the cause of the problem.




Overview This chapter contains the following topics:

| Topic | See page |
|--|----------|
| 4.2–Gas Shortage Detection (U0) | 3–54 |
| 4.3–Reverse Phase (U1) | 3–55 |
| 4.4–Transmission Error between Indoor and Outdoor Unit (U4 or UF) | 3–57 |
| 4.5–Transmission Error between Indoor Unit and Remote Control (U5) | 3–60 |
| 4.6–Transmission Error between MAIN Remote Control and SUB Remote Control (U8) | 3–61 |
| 4.7–Malfunctioning Field Setting Switch (UR) | 3–62 |

4.2 Gas Shortage Detection (U0)

Error code U0

LED indication The table below shows the LED indication.

| Operation | HAP (green) | H1P (red) | H2P (red) |
|----------------|---|---|---|
| Normal |  |  |  |
| Malfunctioning | — | — | — |

Error method

The discharge pipe thermistor detects the malfunction temperature at which there can be a gas shortage. If the discharge temperature exceeds 125°C during more than 20 s, the outdoor unit will stop and retry when the guard timer is OFF (3 min have passed).

During the retrial, the expansion valve will be opened 90 pulses more than in case of the previous start. When the unit restarts with a fully opened expansion valve, the remote control displays “U0” after pressing the test button.

Error generation

The error is generated when the microcomputer detects gas shortage. However, the unit can still operate.

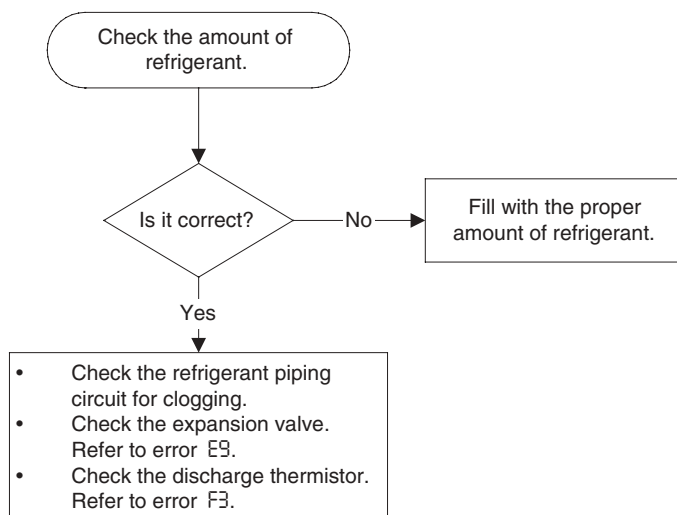
Causes

The possible causes are:



















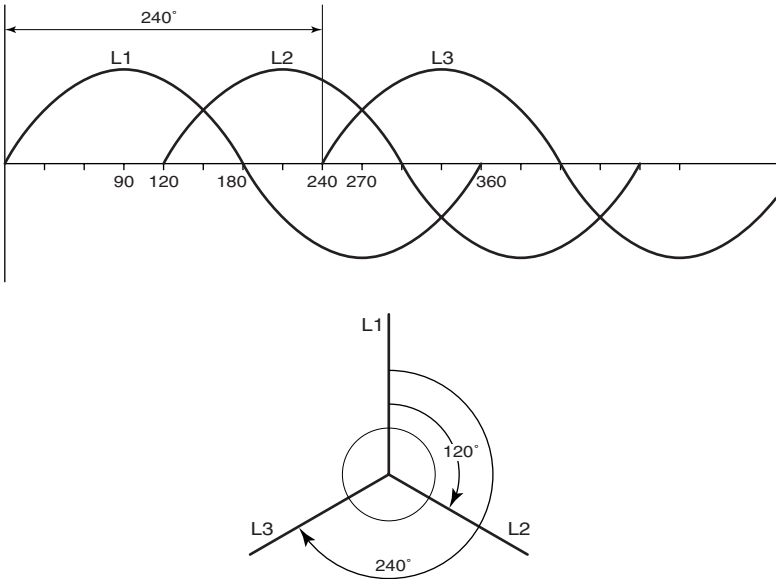
- Refrigerant shortage
- Clogging of the refrigerant piping circuit.

Troubleshooting

To troubleshoot, proceed as follows:

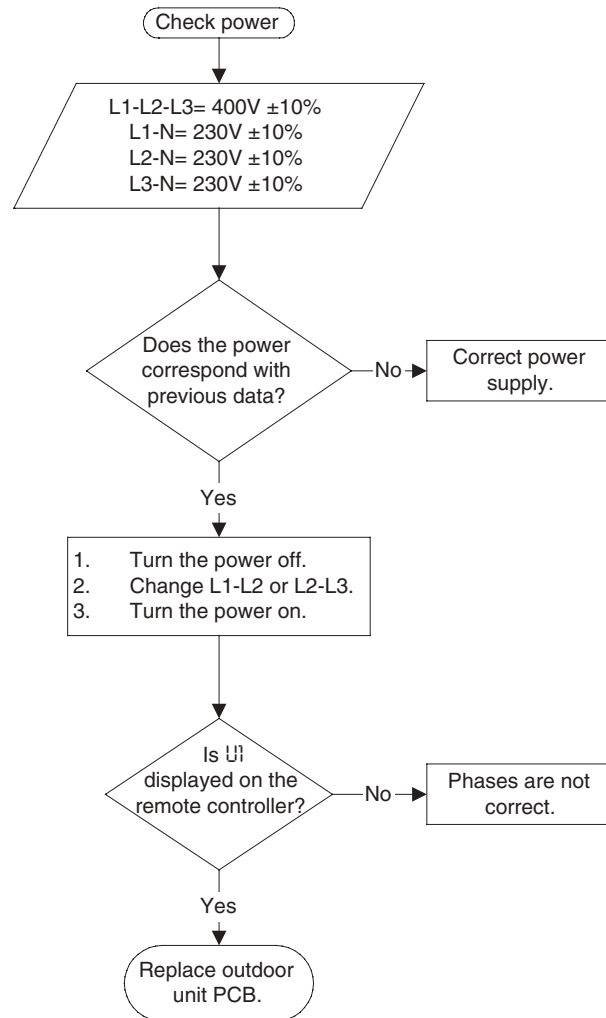


4.3 Reverse Phase (U1)

| Error code | <div>U1</div> <div>This error code is only for 3-phase equipment.</div> | | | | | | | | | | | | |
|------------------|--|---|---|-----------|-----------|--------|---|---|---|----------------|---|---|---|
| LED indication | <div>The table below shows the LED indication.</div> <table> <tr> <th>Operation</th><th>HAP (green)</th><th>H1P (red)</th><th>H2P (red)</th></tr> <tr> <td>Normal</td><td></td><td></td><td></td></tr> <tr> <td>Malfunctioning</td><td></td><td></td><td></td></tr> </table> | Operation | HAP (green) | H1P (red) | H2P (red) | Normal |  |  |  | Malfunctioning |  |  |  |
| Operation | HAP (green) | H1P (red) | H2P (red) | | | | | | | | | | |
| Normal |  |  |  | | | | | | | | | | |
| Malfunctioning |  |  |  | | | | | | | | | | |
| Error generation | <div>The error is generated when the difference between phase L1 and L3 is not 240°. The illustration below shows the 3-phase network.</div> <div>  </div> | | | | | | | | | | | | |
| Causes | <div>The possible causes are:</div> <ul style="list-style-type: none"> ■ Malfunctioning power supply wiring connection ■ Broken or disconnected power supply wiring ■ Malfunctioning outdoor unit PCB | | | | | | | | | | | | |

Troubleshooting




To troubleshoot, proceed as follows:



4.4 Transmission Error between Indoor and Outdoor Unit (U4 or UF)

Error code U4 or UF

LED indication The table below shows the LED indication.

| Operation | HAP (green) | H1P (red) | H2P (red) |
|----------------|---|---|---|
| Normal |  |  |  |
| Malfunctioning | — | — | — |

Error generation The error is generated when the microprocessor detects that the transmission between the indoor and the outdoor unit is not normal over a certain amount of time.

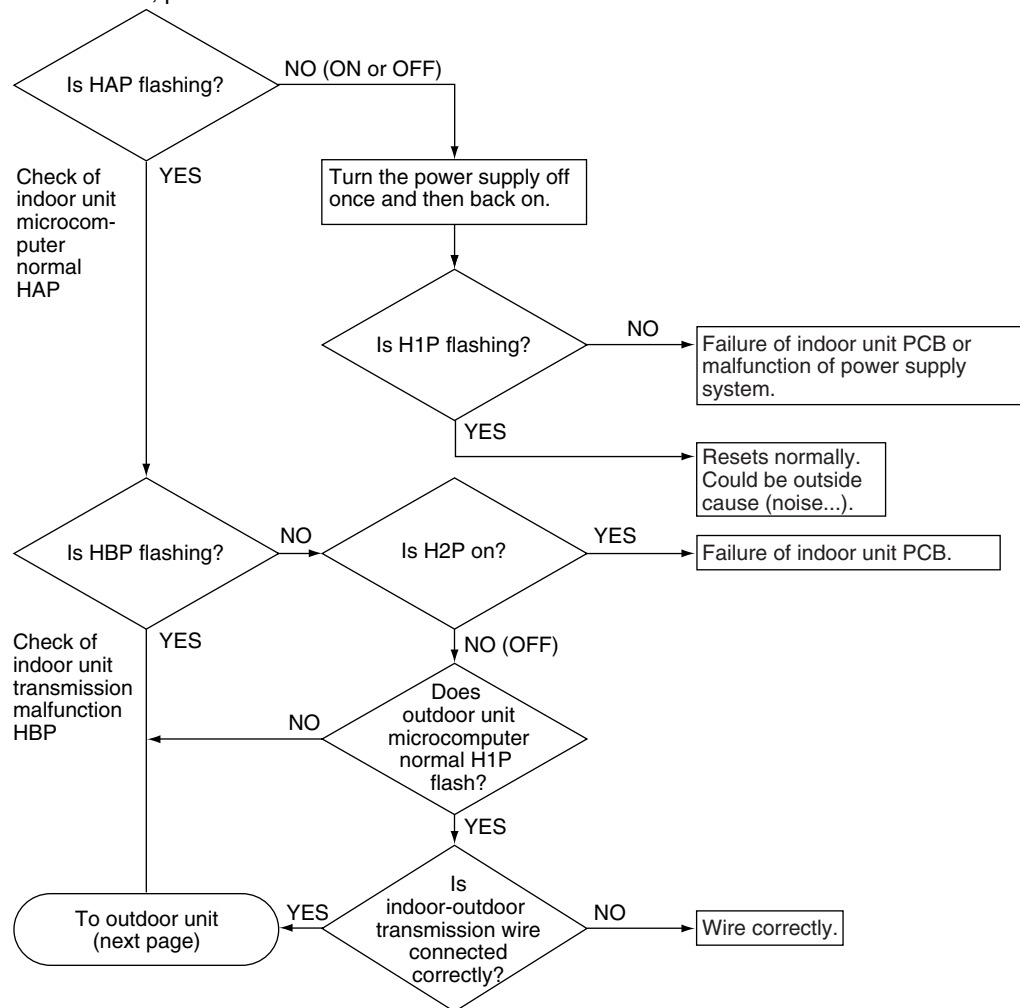
Causes

The possible causes are:

- Wiring indoor-outdoor transmission wire is incorrect
- Malfunctioning indoor unit PCB
- Malfunctioning outdoor unit PCB
- Outside cause (noise...).

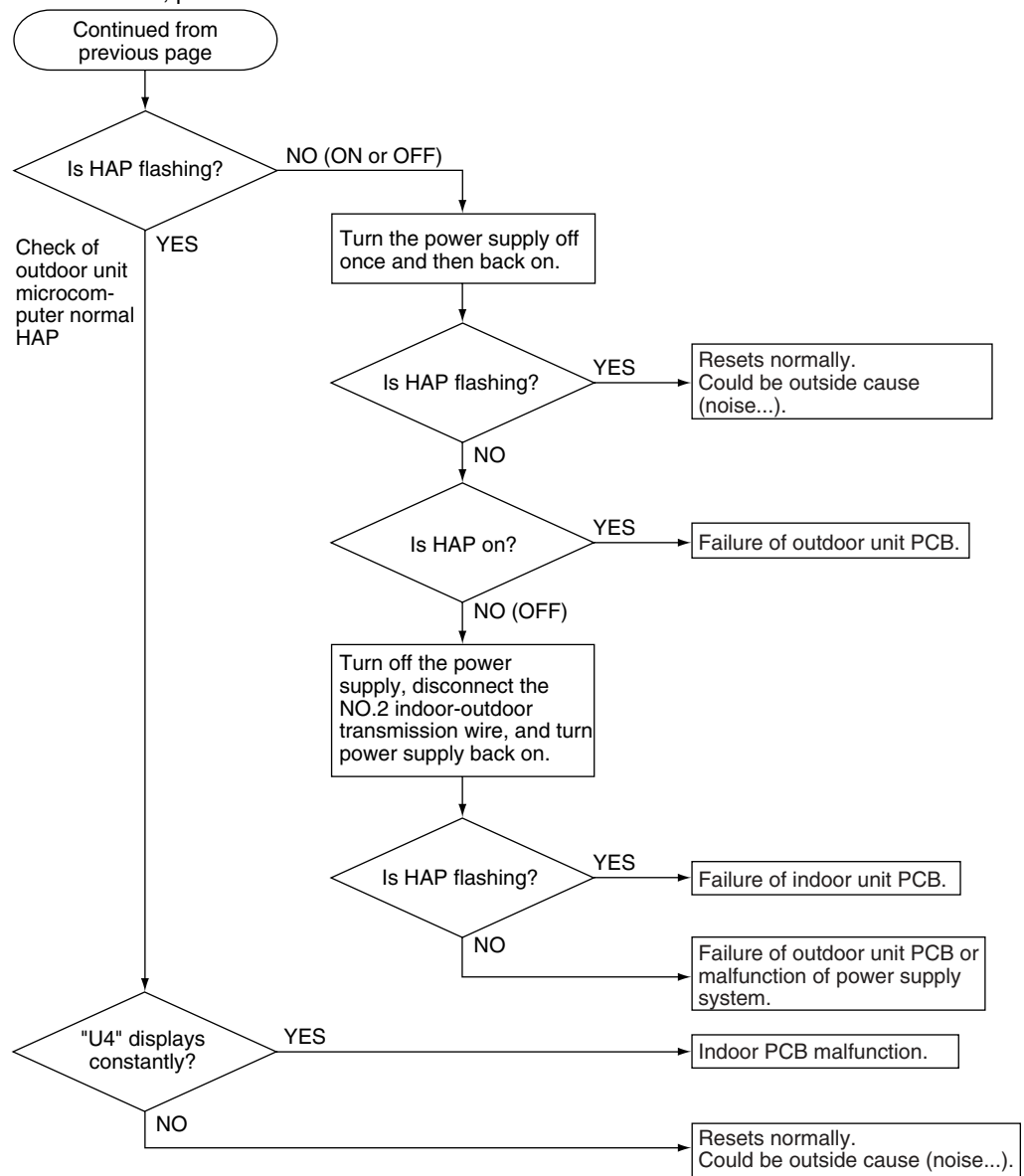
Troubleshooting 1

To troubleshoot, proceed as follows:



Troubleshooting 2

To troubleshoot, proceed as follows:






4.5 Transmission Error between Indoor Unit and Remote Control (U5)

Error code

U5

LED indication

The table below shows the LED indication.

| Operation | HAP (green) | H1P (red) | H2P (red) |
|----------------|---|---|---|
| Normal |  |  |  |
| Malfunctioning | — | — | — |

Error generation

The error is generated when the microprocessor detects that the transmission between the indoor unit and the remote control is not normal over a certain amount of time.

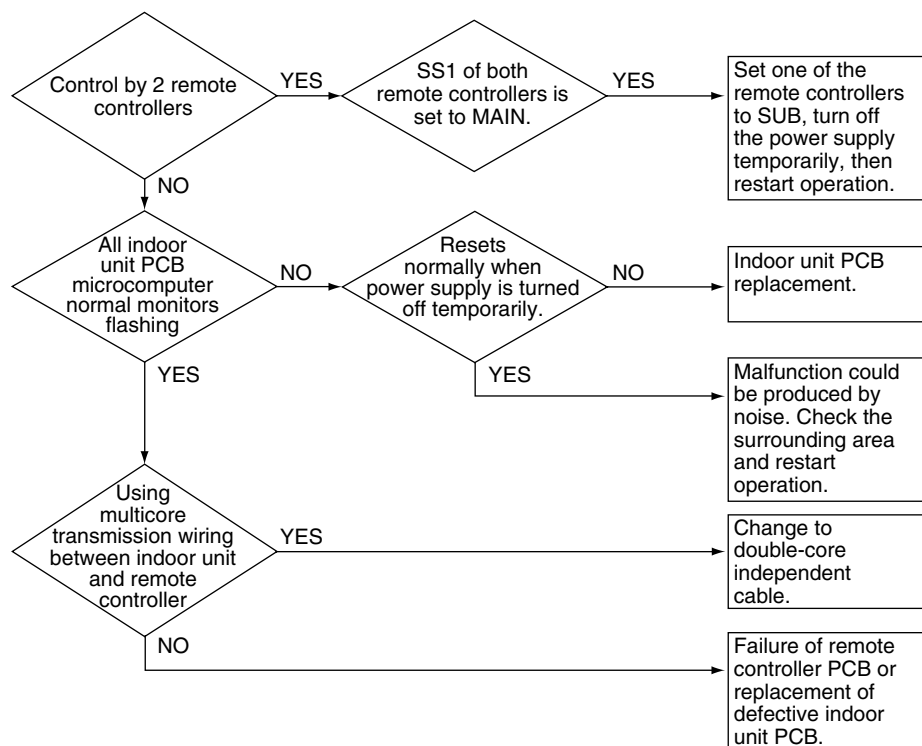
Causes

The possible causes are:

- Malfunctioning remote control
- Malfunctioning indoor PCB
- Outside cause (noise...)
- Connection of two master remote controls (when using two remote controls).

Troubleshooting

To troubleshoot, proceed as follows:



4.6 Transmission Error between MAIN Remote Control and SUB Remote Control (U8)

Error code U8

LED indication The table below shows the LED indication.

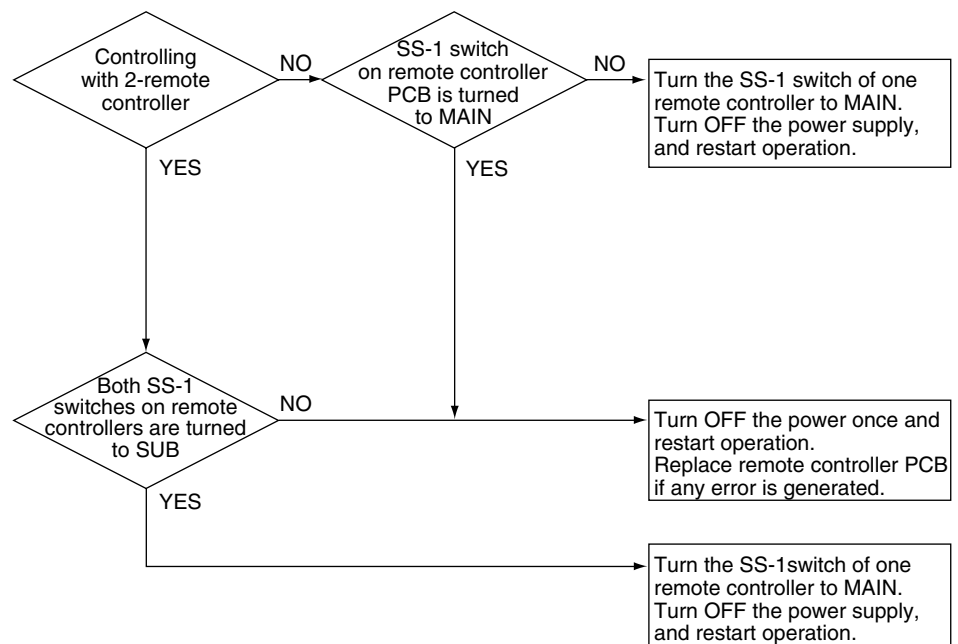
| Operation | HAP (green) | H1P (red) | H2P (red) |
|----------------|-------------|-----------|-----------|
| Normal | ● | ● | ● |
| Malfunctioning | — | — | — |

Error generation The error is generated when, in case of controlling with two remote controls, the microprocessor detects that the transmission between the indoor unit and the remote controls (MAIN and SUB) is not normal over a certain amount of time.










Causes The possible causes are:

- Transmission error between MAIN remote control and SUB remote control
- Connection among SUB remote controls
- Malfunctioning remote control PCB.

Troubleshooting To troubleshoot, proceed as follows:

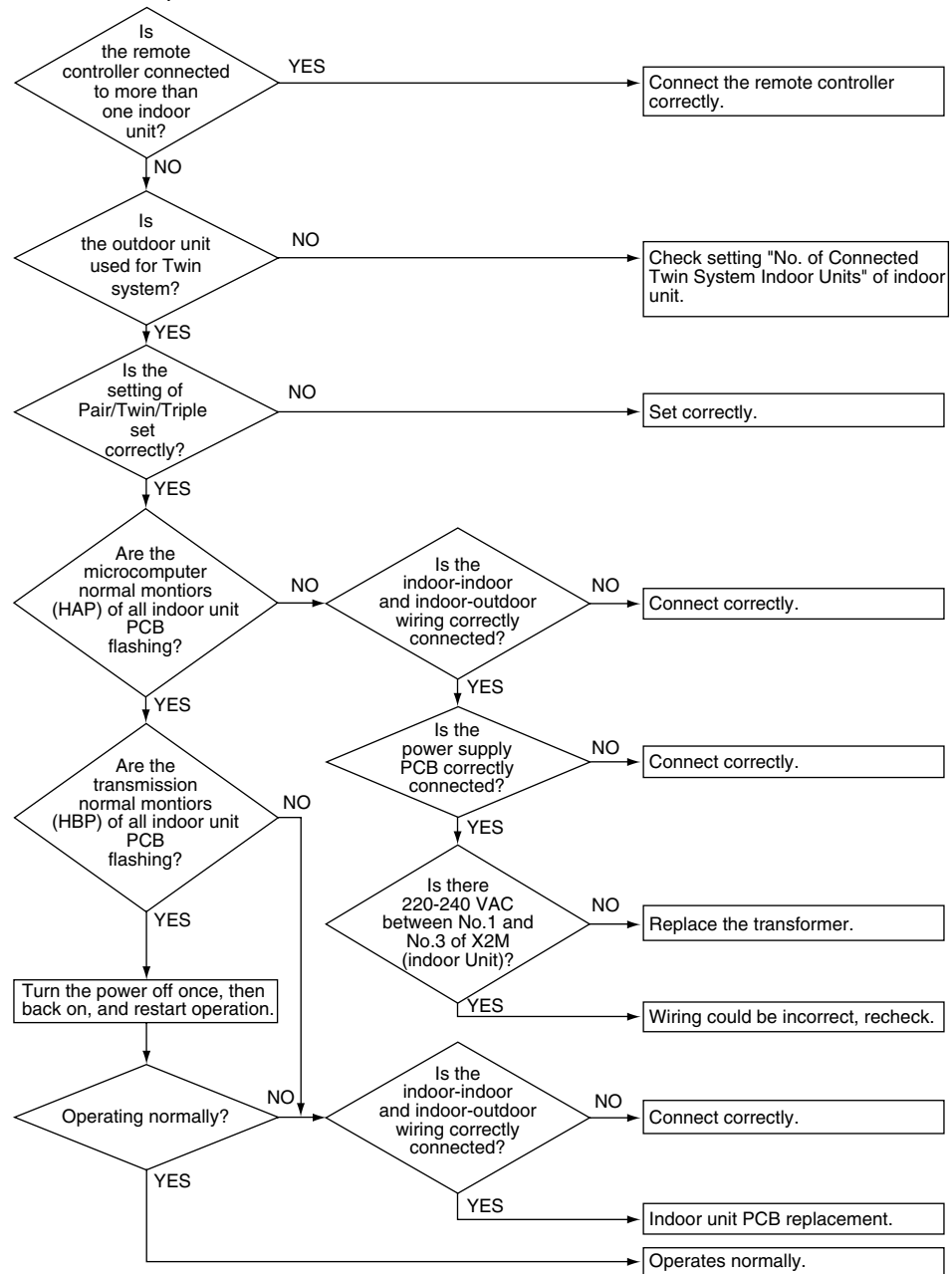


4.7 Malfunctioning Field Setting Switch (UR)

| Error code | UR | | | | | | | | | | | | | | |
|------------------|--|---|---|-----------|-----------|--------|---|---|---|----------------|---|---|---|--|--|
| LED indication | The table below shows the LED indication. | | | | | | | | | | | | | | |
| | <table><tr><th>Operation</th><th>HAP (green)</th><th>H1P (red)</th><th>H2P (red)</th></tr><tr><td>Normal</td><td></td><td></td><td></td></tr><tr><td>Malfunctioning</td><td>—</td><td>—</td><td>—</td></tr></table> | Operation | HAP (green) | H1P (red) | H2P (red) | Normal |  |  |  | Malfunctioning | — | — | — | | |
| Operation | HAP (green) | H1P (red) | H2P (red) | | | | | | | | | | | | |
| Normal |  |  |  | | | | | | | | | | | | |
| Malfunctioning | — | — | — | | | | | | | | | | | | |
| Error generation | The error is generated when incorrect field settings have been set for pair/twin/triple/double twin. | | | | | | | | | | | | | | |
| Causes | <div>The possible causes are:</div> <ul style="list-style-type: none">■ Malfunctioning indoor or outdoor unit PCB■ Malfunctioning power supply PCB■ Indoor-outdoor, indoor-indoor unit transmission wiring■ Malfunctioning remote control wiring. | | | | | | | | | | | | | | |

Troubleshooting

To troubleshoot, proceed as follows:



5 Additional Checks for Troubleshooting

5.1 What Is in This Chapter?

Introduction

This chapter explains how you must check the units to carry out troubleshooting correctly.

Overview

This chapter contains the following topics:

| Topic | See page |
|---|----------|
| 5.2–Indoor Unit: Checking the Fan Motor Hall IC | 3–66 |
| 5.3–Indoor Unit: Checking the Power Supply Wave Form | 3–67 |
| 5.4–Outdoor Unit: Checking the Refrigerant System | 3–68 |
| 5.5–Outdoor unit: Checking the Installation Condition | 3–69 |
| 5.6–Outdoor Unit: Checking the Discharge Pressure | 3–70 |
| 5.7–Outdoor Unit: Checking the Expansion Valve | 3–71 |
| 5.8–Checking the Thermistors | 3–72 |
| 5.9–R1T and R2T | 3–73 |
| 5.10–R3T | 3–74 |

5.2 Indoor Unit: Checking the Fan Motor Hall IC

Applicable units Units using phase cut controlled fan motor with feedback signal.

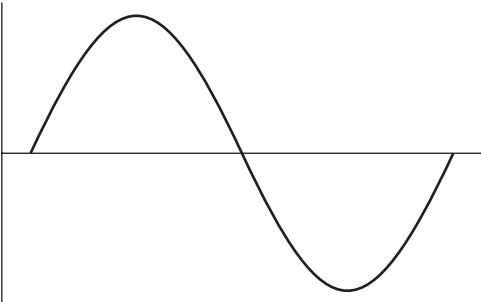
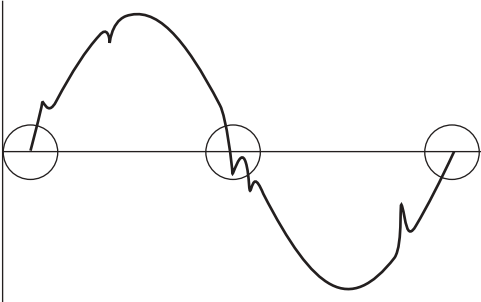
Checking To check the indoor unit fan motor hall IC, proceed as follows:

| Step | Action | | | | | | | | |
|--|--|-------|---------|---|--------------------|--|------------------------|--|--------------------|
| 1 | Make sure connector S7 on PCB 1 is properly connected. | | | | | | | | |
| 2 | Make sure the power is ON and that there is no operation. | | | | | | | | |
| 3 | Measure the voltage between pin 1 and 3 of S7. | | | | | | | | |
| 4 | Turn the fan one rotation with your hand and measure the generated pulses. | | | | | | | | |
| 5 | <div>Proceed as follows:<table><tr><th>If...</th><th>Then...</th></tr><tr><td>The measured voltage between pin 1 and 3 does not equal 5 V</td><td>Replace the PCB 1.</td></tr><tr><td>The generated pulses do not equal 3 pulses between pin 2 and 3</td><td>Replace the fan motor.</td></tr><tr><td>The measured voltage does not equal 5 V and the generated pulses do not equal 3 pulses between pin 2 and 3</td><td>Replace the PCB 1.</td></tr></table></div> | If... | Then... | The measured voltage between pin 1 and 3 does not equal 5 V | Replace the PCB 1. | The generated pulses do not equal 3 pulses between pin 2 and 3 | Replace the fan motor. | The measured voltage does not equal 5 V and the generated pulses do not equal 3 pulses between pin 2 and 3 | Replace the PCB 1. |
| If... | Then... | | | | | | | | |
| The measured voltage between pin 1 and 3 does not equal 5 V | Replace the PCB 1. | | | | | | | | |
| The generated pulses do not equal 3 pulses between pin 2 and 3 | Replace the fan motor. | | | | | | | | |
| The measured voltage does not equal 5 V and the generated pulses do not equal 3 pulses between pin 2 and 3 | Replace the PCB 1. | | | | | | | | |

5.3 Indoor Unit: Checking the Power Supply Wave Form

Checking

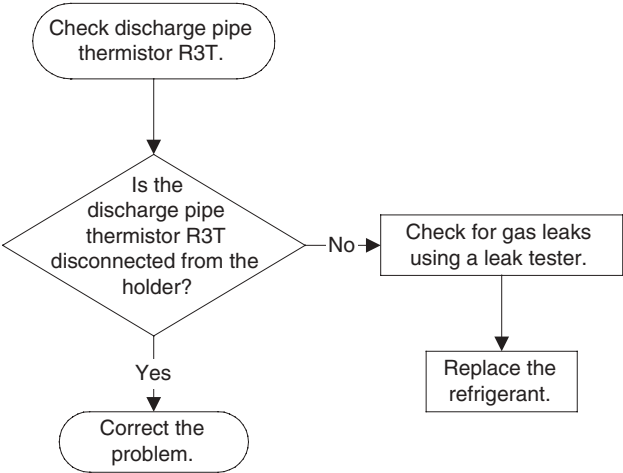
To check the power supply wave form, proceed as follows:

| Step | Action |
|------|--|
| 1 | Measure the power supply wave form between pin 1 and 3 of X1M for the outdoor units or between pin 1 and 3 of X2M for the indoor units. |
| 2 | Check whether the power supply wave form is a sine wave:  |
| 3 | Check whether there is wave form disturbance near the zero cross:  |
| 4 | Adjust the supply voltage. |

5.4 Outdoor Unit: Checking the Refrigerant System

Checking

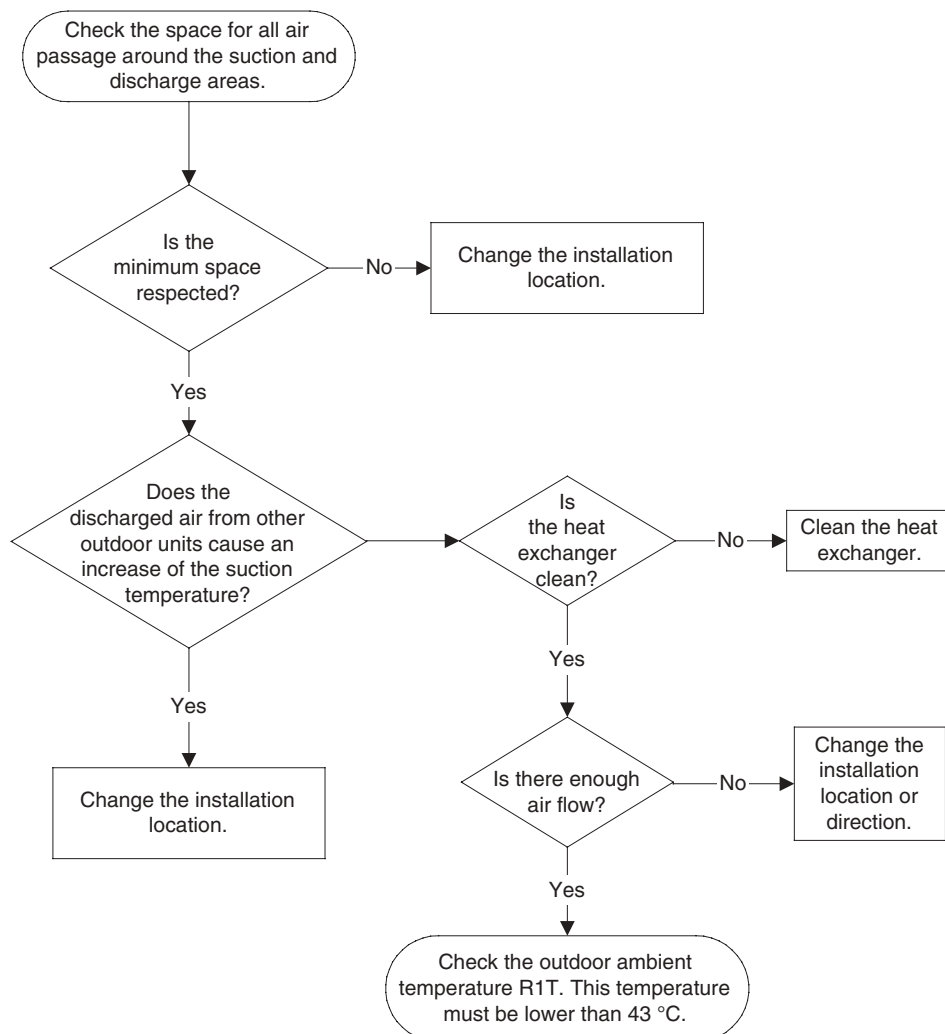
To check the refrigerant system, proceed as follows:



5.5 Outdoor unit: Checking the Installation Condition

Checking

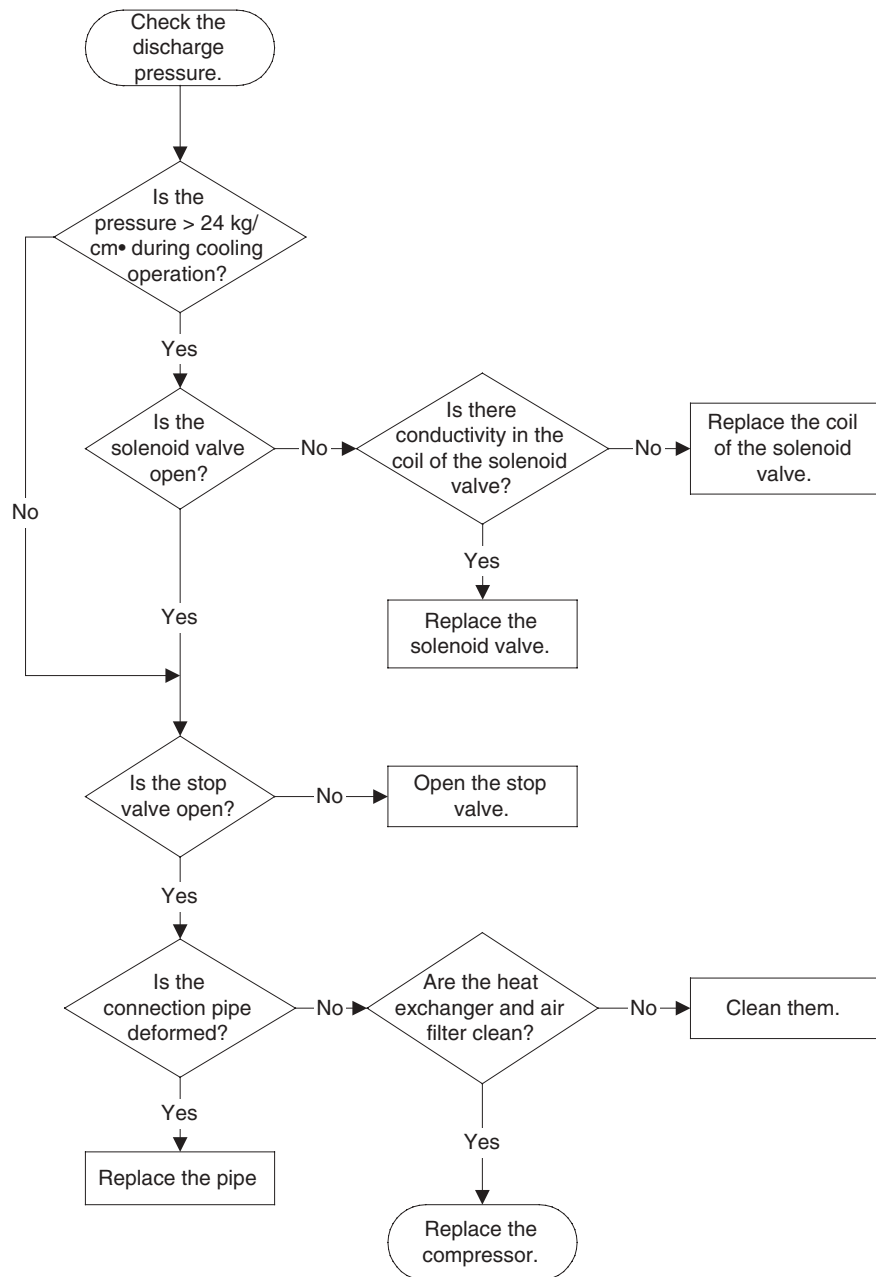
To check the installation condition, proceed as follows:



5.6 Outdoor Unit: Checking the Discharge Pressure

Checking

To check the discharge pressure, proceed as follows:



5.7 Outdoor Unit: Checking the Expansion Valve

Checking

To check the electronic expansion valve, proceed as follows:

| Step | Action | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|----------|----------|---|--|----------------------------|-----------------------------------|----------------------------------|------------------------|---------|---------|---------|---------|-------|---------|---|----------|----------|----------|--------|---------|----------|---|----------|----------|-----|---------|----------|----------|---|----------|--------|---------|----------|----------|----------|---|
| 1 | Check if the expansion valve connector is correctly inserted in the X24A of PCB 1. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Compare the expansion valve unit with the number of the connector to make sure it is correctly connected. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Switch the power OFF. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Switch the power ON to check whether the expansion valve is producing a clicking sound. <table><tr><th>If...</th><th>Then...</th></tr><tr><td>The expansion valve has no clicking sound</td><td>Disconnect the valve connector without the clicking sound and proceed to step 5.</td></tr></table> | If... | Then... | The expansion valve has no clicking sound | Disconnect the valve connector without the clicking sound and proceed to step 5. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| If... | Then... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| The expansion valve has no clicking sound | Disconnect the valve connector without the clicking sound and proceed to step 5. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Check the coil current: Open circuit < normal < short circuit The table below contains the reference resistance values. <table><tr><th>—</th><th>Grey</th><th>Black</th><th>Yellow</th><th>Red</th><th>Orange</th></tr><tr><th>Grey</th><td>—</td><td>40-50 Ω</td><td>40-50 Ω</td><td>40-50 Ω</td><td>40-50 Ω</td></tr><tr><th>Black</th><td>40-50 Ω</td><td>—</td><td>80-100 Ω</td><td>80-100 Ω</td><td>80-100 Ω</td></tr><tr><th>Yellow</th><td>40-50 Ω</td><td>80-100 Ω</td><td>—</td><td>80-100 Ω</td><td>80-100 Ω</td></tr><tr><th>Red</th><td>40-50 Ω</td><td>80-100 Ω</td><td>80-100 Ω</td><td>—</td><td>80-100 Ω</td></tr><tr><th>Orange</th><td>40-50 Ω</td><td>80-100 Ω</td><td>80-100 Ω</td><td>80-100 Ω</td><td>—</td></tr></table> | — | Grey | Black | Yellow | Red | Orange | Grey | — | 40-50 Ω | 40-50 Ω | 40-50 Ω | 40-50 Ω | Black | 40-50 Ω | — | 80-100 Ω | 80-100 Ω | 80-100 Ω | Yellow | 40-50 Ω | 80-100 Ω | — | 80-100 Ω | 80-100 Ω | Red | 40-50 Ω | 80-100 Ω | 80-100 Ω | — | 80-100 Ω | Orange | 40-50 Ω | 80-100 Ω | 80-100 Ω | 80-100 Ω | — |
| — | Grey | Black | Yellow | Red | Orange | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Grey | — | 40-50 Ω | 40-50 Ω | 40-50 Ω | 40-50 Ω | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Black | 40-50 Ω | — | 80-100 Ω | 80-100 Ω | 80-100 Ω | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Yellow | 40-50 Ω | 80-100 Ω | — | 80-100 Ω | 80-100 Ω | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Red | 40-50 Ω | 80-100 Ω | 80-100 Ω | — | 80-100 Ω | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Orange | 40-50 Ω | 80-100 Ω | 80-100 Ω | 80-100 Ω | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Check the clicking sound again. <table><tr><th>If...</th><th>Then...</th></tr><tr><td>There is a clicking sound</td><td>The expansion valve works properly.</td></tr><tr><td>There is no clicking sound</td><td>Replace the expansion valve unit.</td></tr><tr><td>There is still no clicking sound</td><td>Replace outdoor PCB 1.</td></tr></table> | If... | Then... | There is a clicking sound | The expansion valve works properly. | There is no clicking sound | Replace the expansion valve unit. | There is still no clicking sound | Replace outdoor PCB 1. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| If... | Then... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| There is a clicking sound | The expansion valve works properly. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| There is no clicking sound | Replace the expansion valve unit. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| There is still no clicking sound | Replace outdoor PCB 1. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

5.8 Checking the Thermistors

Thermistors

If the cause of the problem is related to the thermistors, then the thermistors should be checked prior to changing the PCB.

For more information about these thermistors, see:

- 'Wiring Diagrams: Outdoor Units'
- 'Wiring Diagrams: Indoor Units'
- "Functions of Thermistors: Large Heat Pumps" on page 5.

Overview of thermistors

The table below contains an overview of the thermistors:

| Thermistor | | Description |
|------------|-----|---|
| Indoor | R1T | Suction air thermistor |
| | R2T | Heat exchanger thermistor (coil thermistor) |
| Outdoor | R1T | Ambient air thermistor |
| | R2T | Heat exchanger thermistor (coil thermistor) |
| | R3T | Discharge pipe thermistor |

Checking

To check the thermistors, proceed as follows:

| Step | Action |
|------|---|
| 1 | Disconnect the thermistor from the PCB. |
| 2 | Read the temperature and the resistor value. |
| 3 | Check if the measured values correspond with the values in the table on the next pages. |

5.9 R1T and R2T

Temperature – resistance

The table below is the thermistor (R1T and R2T) temperature – resistance conversion table.

| Temp. (°C) | R1T (kΩ) | R2T (kΩ) | Temp. (°C) | R1T (kΩ) | R2T (kΩ) | Temp. (°C) | R1T (kΩ) | R2T (kΩ) |
|------------|----------|----------|------------|----------|----------|------------|----------|----------|
| -20 | 197.81 | 192.08 | 20 | 25.01 | 24.45 | 60 | 4.96 | 4.87 |
| -19 | 186.53 | 181.16 | 21 | 23.91 | 23.37 | 61 | 4.79 | 4.70 |
| -18 | 175.97 | 170.94 | 22 | 22.85 | 22.35 | 62 | 4.62 | 4.54 |
| -17 | 166.07 | 161.36 | 23 | 21.85 | 21.37 | 63 | 4.46 | 4.38 |
| -16 | 156.80 | 152.38 | 24 | 20.90 | 20.45 | 64 | 4.30 | 4.23 |
| -15 | 148.10 | 143.96 | 25 | 20.00 | 19.56 | 65 | 4.16 | 4.08 |
| -14 | 139.94 | 136.05 | 26 | 19.14 | 18.73 | 66 | 4.01 | 3.94 |
| -13 | 132.28 | 128.63 | 27 | 18.32 | 17.93 | 67 | 3.88 | 3.81 |
| -12 | 125.09 | 121.66 | 28 | 17.54 | 17.17 | 68 | 3.75 | 3.68 |
| -11 | 118.34 | 115.12 | 29 | 16.80 | 16.45 | 69 | 3.62 | 3.56 |
| -10 | 111.99 | 108.96 | 30 | 16.10 | 15.76 | 70 | 3.50 | 3.44 |
| -9 | 106.03 | 103.18 | 31 | 15.43 | 15.10 | 71 | 3.38 | 3.32 |
| -8 | 100.41 | 97.73 | 32 | 14.79 | 14.48 | 72 | 3.27 | 3.21 |
| -7 | 95.14 | 92.61 | 33 | 14.18 | 13.88 | 73 | 3.16 | 3.11 |
| -6 | 90.17 | 87.79 | 34 | 13.59 | 13.31 | 74 | 3.06 | 3.01 |
| -5 | 85.49 | 83.25 | 35 | 13.04 | 12.77 | 75 | 2.96 | 2.91 |
| -4 | 81.08 | 78.97 | 36 | 12.51 | 12.25 | 76 | 2.86 | 2.82 |
| -3 | 76.93 | 74.94 | 37 | 12.01 | 11.76 | 77 | 2.77 | 2.72 |
| -2 | 73.01 | 71.14 | 38 | 11.52 | 11.29 | 78 | 2.68 | 2.64 |
| -1 | 69.32 | 67.56 | 39 | 11.06 | 10.84 | 79 | 2.60 | 2.55 |
| 0 | 65.84 | 64.17 | 40 | 10.63 | 10.41 | 80 | 2.51 | 2.47 |
| 1 | 62.54 | 60.96 | 41 | 10.21 | 10.00 | — | | |
| 2 | 59.43 | 57.94 | 42 | 9.81 | 9.61 | | | |
| 3 | 56.49 | 55.08 | 43 | 9.42 | 9.24 | | | |
| 4 | 53.71 | 52.38 | 44 | 9.06 | 8.88 | | | |
| 5 | 51.09 | 49.83 | 45 | 8.71 | 8.54 | | | |
| 6 | 48.61 | 47.42 | 46 | 8.37 | 8.21 | | | |
| 7 | 46.26 | 45.14 | 47 | 8.05 | 7.90 | | | |
| 8 | 44.05 | 42.98 | 48 | 7.75 | 7.60 | | | |
| 9 | 41.95 | 40.94 | 49 | 7.46 | 7.31 | | | |
| 10 | 39.96 | 39.01 | 50 | 7.18 | 7.04 | | | |
| 11 | 38.08 | 37.18 | 51 | 6.91 | 6.78 | | | |
| 12 | 36.30 | 35.45 | 52 | 6.65 | 6.53 | | | |
| 13 | 34.62 | 33.81 | 53 | 6.41 | 6.53 | | | |
| 14 | 33.02 | 32.25 | 54 | 6.65 | 6.53 | | | |
| 15 | 31.50 | 30.77 | 55 | 6.41 | 6.29 | | | |
| 16 | 30.06 | 29.37 | 56 | 6.18 | 6.06 | | | |
| 17 | 28.70 | 28.05 | 57 | 5.95 | 5.84 | | | |
| 18 | 27.41 | 26.78 | 58 | 5.74 | 5.43 | | | |
| 19 | 26.18 | 25.59 | 59 | 5.14 | 5.05 | | | |

5.10 R3T

Temperature – resistance

The table below is the thermistor (R3T) temperature – resistance conversion table.

| Temp. (°C) | Resist. (kΩ) | Temp. (°C) | Resist. (kΩ) | Temp. (°C) | Resist. (kΩ) |
|---------------|-----------------|---------------|-----------------|---------------|-----------------|
| — | — | 60.0 | 52.8 | 130.0 | 5.4 |
| — | — | 62.0 | 48.9 | 132.0 | 5.4 |
| -6.0 | 1120.0 | 64.0 | 45.3 | 134.0 | 4.8 |
| -4.0 | 1002.5 | 66.0 | 42.0 | 136.0 | 4.6 |
| -2.0 | 898.6 | 68.0 | 39.0 | 138.0 | 4.3 |
| 0.0 | 806.5 | 70.0 | 36.3 | 140.0 | 4.1 |
| 2.0 | 724.8 | 72.0 | 33.7 | 142.0 | 3.9 |
| 4.0 | 652.2 | 74.0 | 31.4 | 144.0 | 3.7 |
| 6.0 | 587.6 | 76.0 | 29.2 | 146.0 | 3.5 |
| 8.0 | 530.1 | 78.0 | 27.2 | 148.0 | 3.3 |
| 10.0 | 478.8 | 80.0 | 25.4 | 150.0 | 3.2 |
| 12.0 | 432.9 | 82.0 | 23.7 | 152.0 | 3.0 |
| 14.0 | 392.0 | — | — | 154.0 | 2.9 |
| 16.0 | 355.3 | — | — | 156.0 | 2.7 |
| 18.0 | 322.4 | — | — | 158.0 | 2.6 |
| 20.0 | 292.9 | — | — | 160.0 | 2.5 |
| 22.0 | 266.3 | 92.0 | 16.9 | 162.0 | 2.3 |
| 24.0 | 242.5 | 94.0 | 15.8 | 164.0 | 2.5 |
| 26.0 | 221.0 | 96.0 | 14.8 | 166.0 | 2.1 |
| 28.0 | 201.6 | 98.0 | 13.9 | 168.0 | 2.0 |
| 30.0 | 184.1 | 100.0 | 13.1 | 170.0 | 1.9 |
| 32.0 | 168.3 | 102.0 | 12.3 | 172.0 | 1.9 |
| 34.0 | 154.0 | 104.0 | 11.5 | 174.0 | 1.8 |
| 36.0 | 141.0 | 106.0 | 10.8 | 176.0 | 1.7 |
| 38.0 | 129.3 | 108.0 | 10.2 | 178.0 | 1.6 |
| 40.0 | 118.7 | 110.0 | 9.6 | 180.0 | 1.5 |
| 42.0 | 109.0 | 112.0 | 9.0 | — | |
| 44.0 | 100.2 | 114.0 | 8.5 | | |
| 46.0 | 92.2 | 116.0 | 8.0 | | |
| 48.0 | 84.9 | 118.0 | 7.6 | | |
| 50.0 | 78.3 | 120.0 | 7.1 | | |
| 52.0 | 72.2 | 122.0 | 6.7 | | |
| 54.0 | 66.7 | 124.0 | 6.4 | | |
| 56.0 | 61.6 | 126.0 | 6.0 | | |
| 48.0 | 57.0 | 128.0 | 5.7 | | |
| | | | | | |